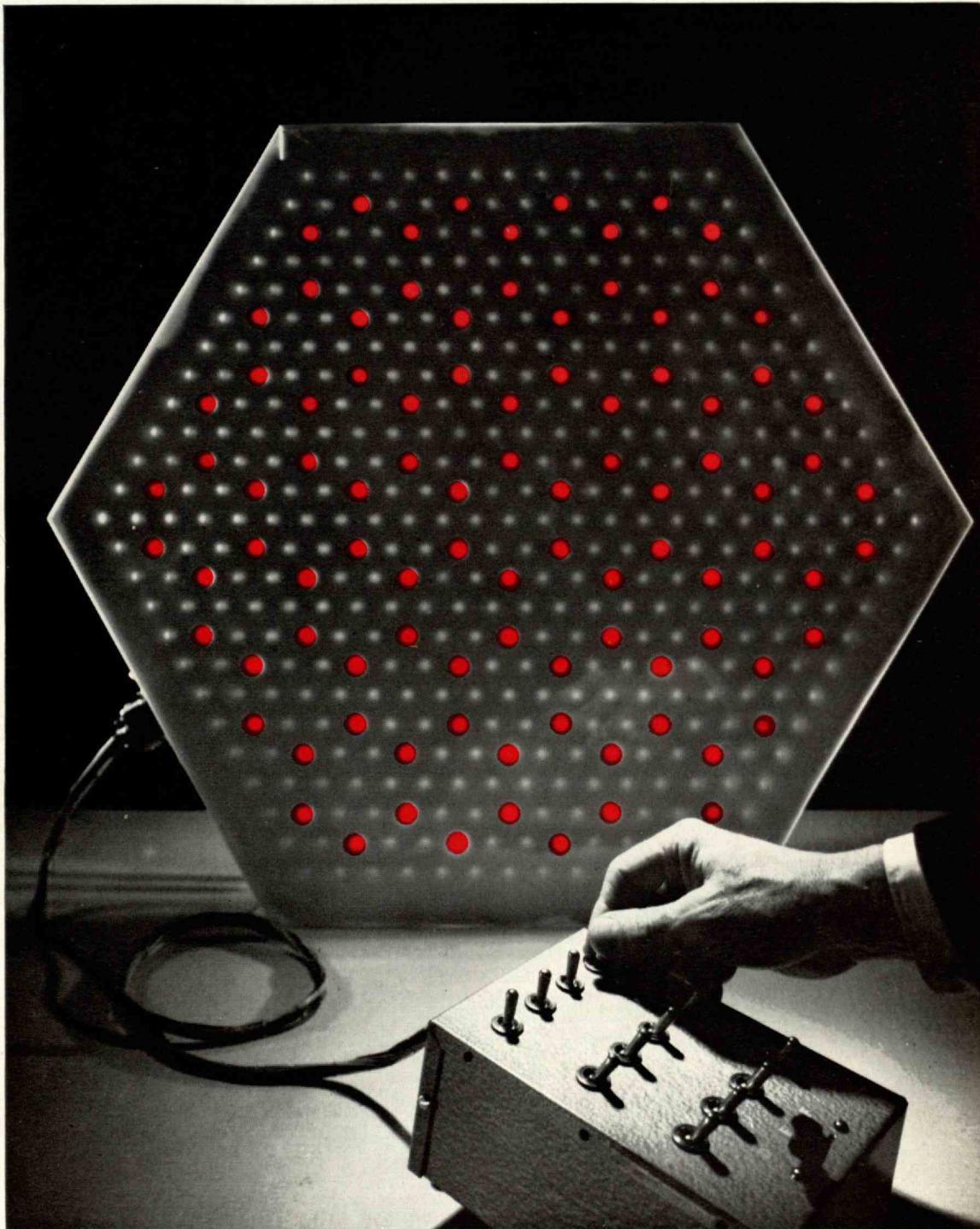
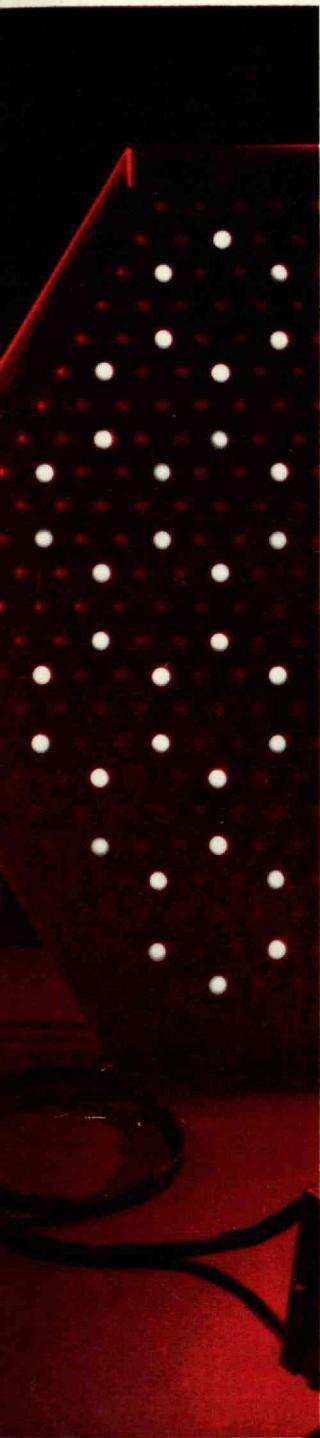


# Technology Review

April, 1962

Edited at the Massachusetts  
Institute of Technology



Cotton, Slavery  
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The Mathematics  
of Crystals—Page 25

# technology review

Published by MIT

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## Carbon black: new tool for plastics-surgery

Plastics, like people, are faced with the problem of aging. Unlike people, however, plastics can do something about it.

Cabot, for instance, provides the plastics industry with a special grade of carbon black called Black Pearls 74, which, dispersed in plastics, maintains the original flexibility of the material, by giving it superior weathering characteristics and a greatly extended life expectancy.

The happy characteristic of adding life to a product and health to a profit picture is the common denominator of all the raw materials Cabot produces for industry the world over.

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*For complete information, phone or write:*

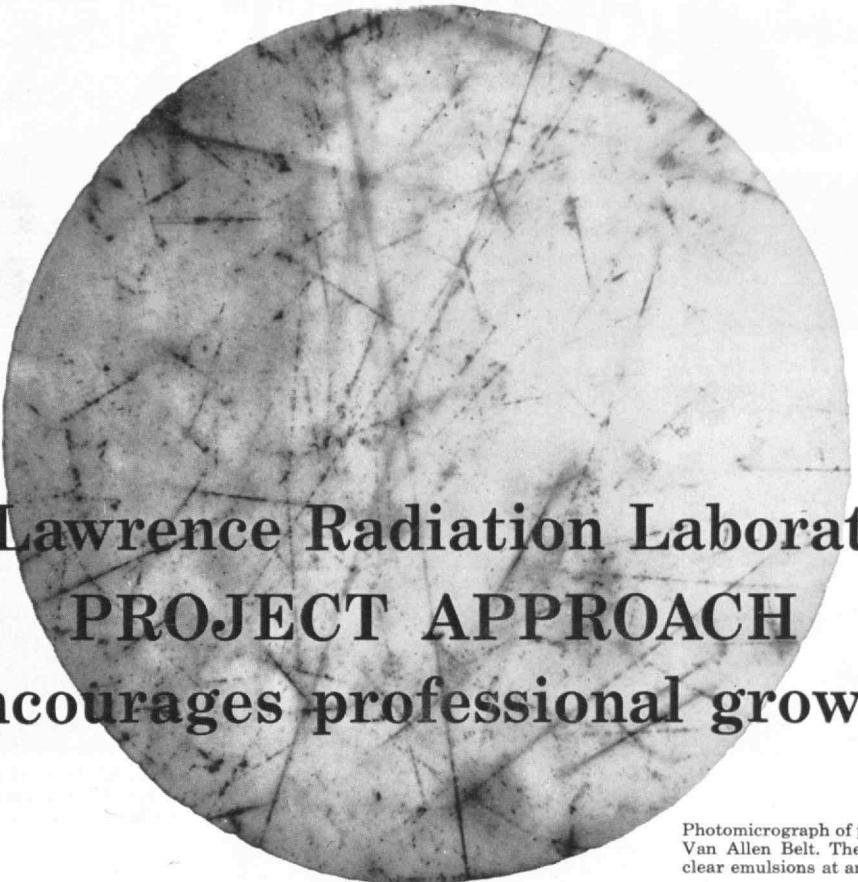


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# The Lawrence Radiation Laboratory's PROJECT APPROACH encourages professional growth

Photomicrograph of protons trapped in the lower Van Allen Belt. These protons entered the nuclear emulsions at an altitude of about 800 miles.



At LRL the skills of virtually every scientific and technical discipline are used in conducting fundamental explorations of the atomic nucleus and developmental programs growing out of nuclear research. The "project" approach to the various programs enables the specialist to perform with maximum effectiveness and to familiarize himself with the activities in several fields other than his own. The broad range of activities at the Laboratory can be divided roughly into three categories:

#### PHYSICS AND CHEMISTRY

The many fields of physics investigation include fission reactions, neutronics, hydrodynamics, high- and low-energy physics, numerical analysis, geophysics and astrophysics. The broad scope of the problems encountered requires the imaginative efforts of both theoretical and experimental physicists with many different interests.

In Chemistry, long-range experimental and theoretical studies, applied

research programs, materials development work, and, on occasion, limited production of novel materials needed by the Laboratory exemplify the variety of work performed by chemists and engineers of many specialties.

#### ENGINEERING AND DEVELOPMENT

The successful collaboration of engineers and scientists has made LRL a leader in the development of unique research apparatus and diagnostic equipment. Mechanical Engineering responsibilities include design and fabrication of nuclear and high explosive devices, analytical and experimental studies, mechanical design, non-destructive and environmental testing, metrology, and production coordination.

Electronics designs and develops systems for automatic and servo control, reactor control, instrumentation and simulation, data acquisition, data reduction and energy storage and transfer, and provides electronics consulting service throughout the Laboratory.

#### COMPUTATION

The LRL computer complex, one of the

largest in the nation, includes 3 7090's, a 650, a 1401, LARC, STRETCH, and attendant input-output equipment. The majority of problems are concerned with multidimensional, coupled, partial differential equations of hydrodynamics, heat transfer, and neutron diffusion.

#### CURRENT PROJECTS

The Laboratory's manifold activities are conducted at three locations — Berkeley and Livermore in the San Francisco Bay area, and the Nevada Test Site near Las Vegas, Nevada.

The Laboratory at Livermore is presently active in four long-range research projects: Whitney, the design and testing of nuclear and thermonuclear explosives; Plowshare, the development of scientific and industrial uses for nuclear explosives; Sherwood, research into control of the fusion reaction, and Pluto, the development of a very high temperature reactor for powering a ramjet propulsion system.

LRL particularly needs scientists and engineers who have the skill and imagination to solve an ever-changing array of new and novel problems.

**nuclear energy research**

For further information on facilities and work at LRL, write to:  
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# CAREER BULLETIN FROM

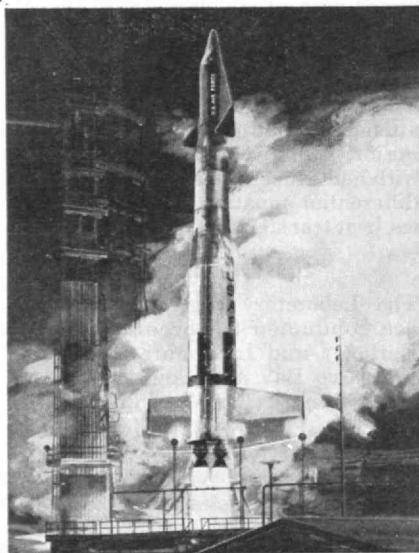
## BOEING



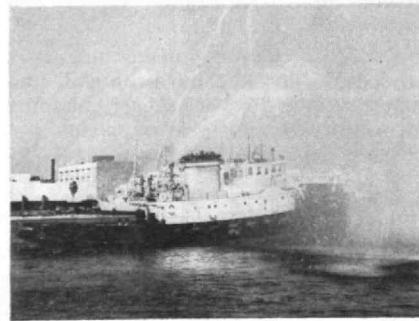
Drawing of newly announced short-to-medium range Boeing 727 jetliner. First 727 sale was largest in transportation history. More airlines have ordered—and re-ordered—more jetliners from Boeing than from any other manufacturer.



Boeing KC-135 jet tanker-transport is U.S. Air Force's principal aerial refueler. Forty-five C-135 cargo-jet models of KC-135 have been ordered for Military Air Transport Service.



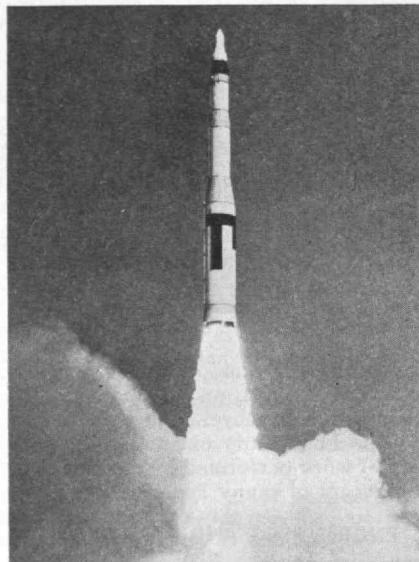
Dyna-Soar manned space glider is shown, in artist's concept, atop Titan ICBM for launching. Design will permit return for conventional landing. Boeing is prime contractor for glider and system.



Boeing gas turbine engines power pumps on U.S. Army tug-fireboat. In other applications, Boeing engines power U.S. Navy boats and generators.

The continuing expansion of advanced programs at Boeing offers outstanding career openings to graduates in engineering, scientific and management disciplines. At Boeing you'll find a professional climate conducive to deeply rewarding achievement and rapid advancement. You'll enjoy many advantages, including up-to-the-minute facilities, dynamic industry environment, and company-paid graduate study programs (Masters and Ph.D.).

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Minuteman, nation's first solid-fuel intercontinental ballistic missile, shown on initial flight—most successful first flight in missile history. Besides holding major Minuteman contract responsibility, Boeing holds primary developmental, building and test responsibility for SATURN S-1B booster.



Boeing Scientific Research Laboratories where scientists expand the frontiers of knowledge in research in solid state physics, flight sciences, mathematics, plasma physics and geo-astrophysics.

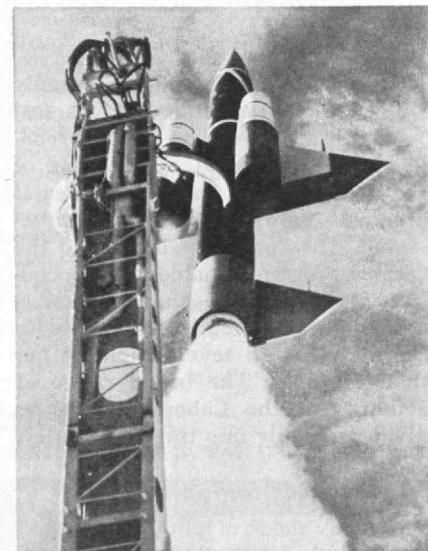
## BOEING



Boeing-Vertol 107 helicopter shown with famous Boeing 707 jetliner, world's most popular airliner. Boeing is world leader in jet transportation.



Boeing B-52H shown carrying mockups of Skybolt air-launch ballistic missiles. B-52s are also jet-fast platforms for Hound Dog guided missiles. They hold 11 world nonstop distance, speed records.



Supersonic Boeing BOMARC, longest-range air defense missile in U.S. Air Force arsenal, is now operational at Air Defense Command bases. New "B" model has range of more than 400 miles.



Drawing of 115-foot hydrofoil craft Boeing is building for U.S. Navy. Riding out of water, craft will "fly" at speeds up to 45 knots on underwater wings.

# Technology Review

Reg. U.S. Pat. Off.

Volume 64, Number 6

Edited at the Massachusetts Institute of Technology

April, 1962

## Feedback

### Engineer's War Cry

FROM J. P. DAVIS, '55:

(An article in the New York Times quoted a Michigan State University President as saying that engineers must emphasize the glamor of their jobs in order to compete with Science for good students.)

Hark to the news  
It's time to choose  
You've nought to lose  
Don't stammer,  
But speak out loud  
To tell the crowd  
That we are proud,  
With glamor.

The hour is here  
Brave Engineer  
For us to cheer  
Defiance,  
No more discreet  
We'll stamp our feet  
We must compete  
With Science!

With subtle stress  
The public press  
Begins to dress  
In glamor  
That dreamy race  
Who look to Space.  
"Science" they chase  
and clamor.

Forget restraint  
It's time to paint  
What our job ain't  
And is.  
Imagination  
In education  
Means Chem's our ration  
And Phys.

In inept schools  
Unfeeling fools  
While America drools  
For Glory,  
Will give no hearing  
To our endearing  
Engineering  
Story.

(Concluded on page 44)



*M.I.T.'S COMMENCEMENT SPEAKER this year will be the Reverend Theodore M. Hesburgh, C.S.C., President of the University of Notre Dame. Father Hesburgh is the Vatican City's representative to the International Atomic Energy Agency, a member of the U.S. Commission on Civil Rights and the National Science Board, and a trustee of the Rockefeller Foundation.*

EDITOR: Volta Torrey; BUSINESS MANAGER: R. T. Jope, '28; CIRCULATION MANAGER: D. P. Severance, '38; EDITORIAL ASSOCIATES: J. J. Rowlands, Francis E. Wylie, John I. Mattill; EDITORIAL STAFF: Ruth King, Roberta A. Clark; BUSINESS STAFF: Madeline R. McCormick, Patricia Fletcher; PUBLISHER: H. E. Lobdell, '17.

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Recommendations from an M.I.T. student of international problems.

# Individuals Noteworthy

## Honors to Alumni

ALUMNI recipients of recent honors have included:

*Vannevar Bush, '16*, the Kettering Award of the Patent, Trademark, and Copyright Foundation . . . *George H. Kesler, '49*, the Extractive Metallurgy Division Award, by the Metallurgical Society of A.I.M.E. . . . *Douglas G. Harvey, '53*, the Lawrence B. Sperry Award of the Institute of the Aeronautical Sciences . . . *James L. Everett, 3d, '59*, the outstanding young man of 1961 award, by Philadelphia's Junior Chamber of Commerce.

## Marshall Scholar

RICHARD B. STEIN, '62, Class President and chairman of the Student Committee on Educational Policy, has received a Marshall Scholarship from the British government to study politics, economics, and philosophy at Oxford University. He worked last summer in the West German equivalent of the U.S. Bureau of Standards and hopes to specialize in technical assistance.

## Chemists' Chairman

PROFESSOR ARTHUR C. COPE of M.I.T., who was president of the American Chemical Society last year, is now serving as chairman of its board and of its Executive Committee.



Frank R. Milliken, '34



William L. Taggart, Jr., '27

## Alumni Nominees

ON BALLOTS now being cast by M.I.T. Alumni, the name of William L. Taggart, '27, appears as the presidential nominee and those of the men shown below as nominees for election to the M.I.T. Corporation.



Theodore A. Mangelsdorf, '26

## In New Posts

AMONG Alumni recently reported being elected, promoted, or appointed to new positions were:

*Raymond C. Reese, '20*, as President, American Concrete Institute . . . *Lester C. Lewis, '22*, as Curator of Physical Sciences, the Smithsonian Institution . . . *Elwood M. Proctor, '24*, as Vice-president, Bemis Bag Company . . . *David A. Shepard, '26*, as Trustee, the Carnegie Corporation of New York . . . *Robert B. Semple, '32*, as a Director, Chrysler Corporation;

*Ingvold E. Madsen, '33*, as Editor, "Iron and Steel Engineer" . . . *Gregory Flint, '35*, as Manager of Market Development, Allied Chemical's International Division . . . *Ladislaw Reday, '36*, as Director of Dealer Operations, Servisoft of California . . . *Edwin A. Kass, '37*, as Supervising Sanitary Engineer, and *George R. Bises, '41*, as Assistant Vice-president, Gibbs & Hill, Inc. . . . *David S. McNally, '41*, as Vice-president, Amphenol Connector Division, Amphenol-Borg;

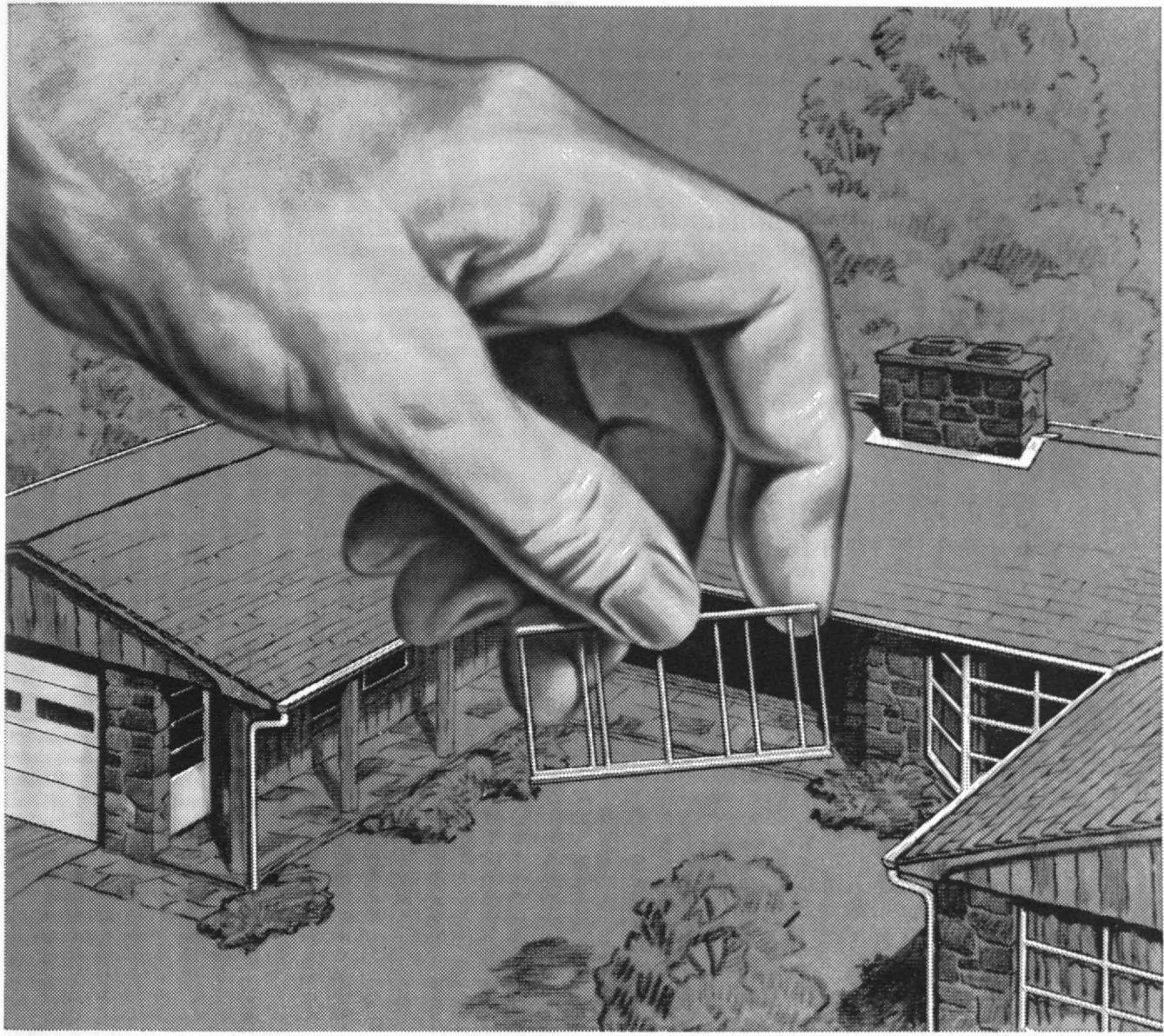
*Frank E. French, Jr., '43*, as Sales Manager for industrial products, Du Pont Company's Dyes and Chemicals Division . . . *Jay V. R. Kaufman, '44*, as Chief Scientist, Ordnance Special Weapons, Ammunition Command, Picatinny Arsenal . . . *James L. Phillips, '47*, as Vice-president, Vance, Sanders and Company, Inc., Boston;

*William J. Harris, Jr., '48*, as Assistant to the Vice-president, Battelle Memorial Institute . . . *Arthur H. Kuljian, '48*, as President, The Kuljian Corporation.

(Continued on page 6)



D. Reid Weedon, Jr., '41



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Massachusetts Institute of Technology

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## Individuals Noteworthy (Continued from page 4)

### Alumni Committees

SUBCOMMITTEES aiding John L. Danforth, '40, and Edward O. Vetter, '42, chairman and deputy chairman, respectively, of the 1962 Alumni Day Committee in planning the June 11 program include:

Registration—Wolcott A. Hokanson, Robert E. Hewes, '43, and G. Edward Nealand, '32.

Luncheon—Paul Wing, Jr., '34, Arthur P. Alexander, '58, William H. Carlisle, Jr., '28, Donald S. Cunningham, '26, Charles F. Langenhagen, Jr., '58, Richard L. McDowell, '60, George H. R. McQueen, '49, and Edward B. Roberts, '57.

Symposium—Frederick P. Stearns, '44, Robert M. Briber, '52, Robert C. Cowen, '49, Peter Elias, '44, Alfred J. Ferretti, '17, Francis L. Friedman, '49, Claude F. Machen, '31, and Mrs. Gregory Smith.

Banquet and Entertainment—Edward R. Marden, '41, William E. Barbour, '33, Edward A. Beaupre, '41, Miles P. Cowen, Alve J. Erickson, '51, Fisher Hills, '29, Mrs. Patrick M. Hurley, George O. Lloyd, Jr., '41, John H. Macleod, Jr., '41, William Morrison, Paul P. Shepherd, '53, Irving Stein, '41.

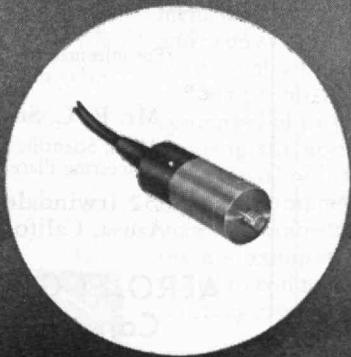
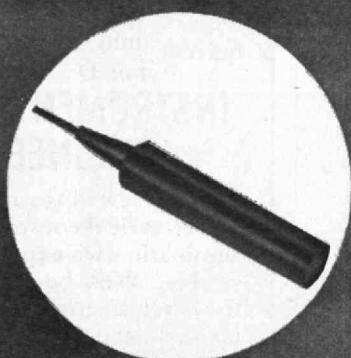
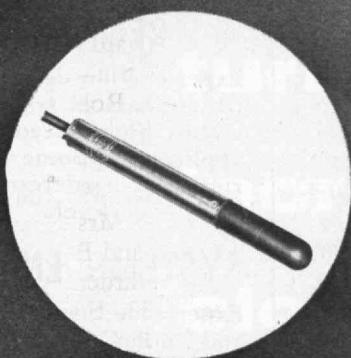
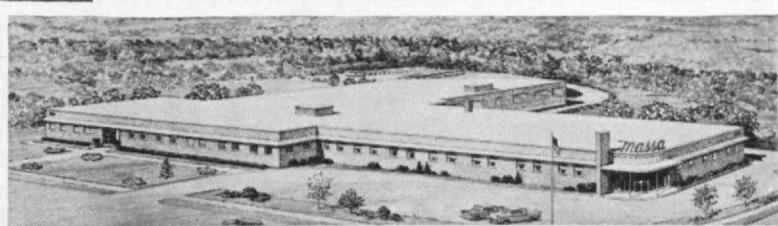
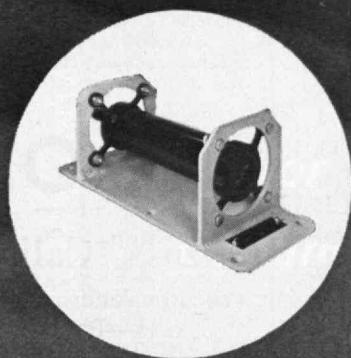
The committee asked to propose future Alumni Day plans is headed by Thomas F. Creamer, '40, and includes Leo M. Beckwith, '35, Robert M. Briber, '52, William S. Edgerly, '49, Henry B. Kane, '24, Fred G. Lehmann, '51, Robert L. Malster, '56, Harold F. Miller, '36, Donald P. Severance, '38, Albert O. Wilson, Jr., '38, and William F. Wingard, '39.

### M.I.T. Faculty Notes

NORMAN A. PHILLIPS, Associate Professor of Meteorology, is one of the editors of the "Journal of the Atmospheric Sciences," a new periodical, and Associate Professor Edward N. Lorenz, '43, was among the contributors to its first issue. . . .

Jerrold R. Zacharias, Professor of Physics, has been elected to the board of governors of the Weizmann Institute. . . . H. Guyford Stever, Head of the Departments of Mechanical Engineering, and Naval Architecture and Marine Engineering, has been elected a trustee of Colgate University.

(Continued on page 8)



## MASSA SONAR FACILITIES ADVANCE ASW DETECTION CAPABILITIES

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# TECH NEWS

for Scientists, Mathematicians  
Operations Evaluation Group, M.I.T.

"Operations research"—the term itself—has attained full status in the recently published Webster's Third International Dictionary. OEG takes particular pleasure in this recognition because of our background as the oldest military operations research organization in the country.

Now when someone asks, "But what do you do?" we can refer him to Webster's.

OEG advises

the Chief of Naval Operations and certain Fleet and Force commanders regarding operational problems susceptible to quantitative analysis.

A recent example is collected under the title, "The Selection of Cargo for Air Transport." Here the objective was to determine criteria for shipping the myriad replacement parts stocked by the Navy's Yokosuka (Japan) Supply Depot. One interesting discovery: Less than 1% of the line items account for well over half the dollar value of annual issues at Yokosuka.

The more sobering content of another recent study can be deduced from its title, "The Effects of Radiation on Populations," a two-part work considering (1) the effects on individuals exposed to radiation today and (2) the genetic consequences for future generations. One of many conclusions: The continued detonation of nuclear weapons in the stratosphere, at a 100-megaton-yearly rate, would result in reducing individual life expectancy by approximately 20 days.

Assisting in the creation of a stable U. S. deterrent posture is one of the major aims of OEG's research program. Permanent career positions are available to scientists and mathematicians with advanced degrees who are interested in problem-solving and want to contribute substantively to the national purpose. These positions are in Washington, D. C. Please send your inquiry to the Director, Dr. Jacinto Steinhardt.

**OEG**

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## Individuals Noteworthy

(Continued from page 6)

### Jerome A. Uram: 1927-1962

AN AIRPLANE ACCIDENT in Peru on February 4 took the lives of Jerome A. Uram, Assistant Professor of Food Toxicology at M.I.T., Mrs. Uram, and Dr. and Mrs. Richard J. Block of New York. Drs. Uram and Block were helping local authorities study toxic hazards in food contaminated by insecticides or fungi. They were flying to Pulcallpa, a village at the headwaters of the Amazon, for field trials of a new low-cost, protein-rich vegetable mixture under severe tropical conditions.

Dr. Uram came to M.I.T. last summer from the National Institutes of Health. Born in Philadelphia in 1927, he was a Pennsylvania State University graduate, and received his doctorate from the Harvard School of Public Health in 1958. He had been a biochemist for the Food and Drug Administration and Executive Secretary of the Nutrition Study Section of the NIH Division of Research Grants, and helped organize food technology work now being done at M.I.T.

Interment was in the American Cemetery in Lima. Dr. and Mrs. Uram are survived by two children, Ellen, 8, and Eric, 5.

(Continued on page 40)



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These compact, lightweight systems for masers, parametric amplifiers, IR cell cooling and computer components are ideally suited to commercial applications as well as military ground and aerospace uses.

AiResearch was first in production with an open cycle IR cooling system, and has already produced a closed cycle nitrogen system. The company is now working on military programs for 30°K and 4.2°K closed cycle systems.

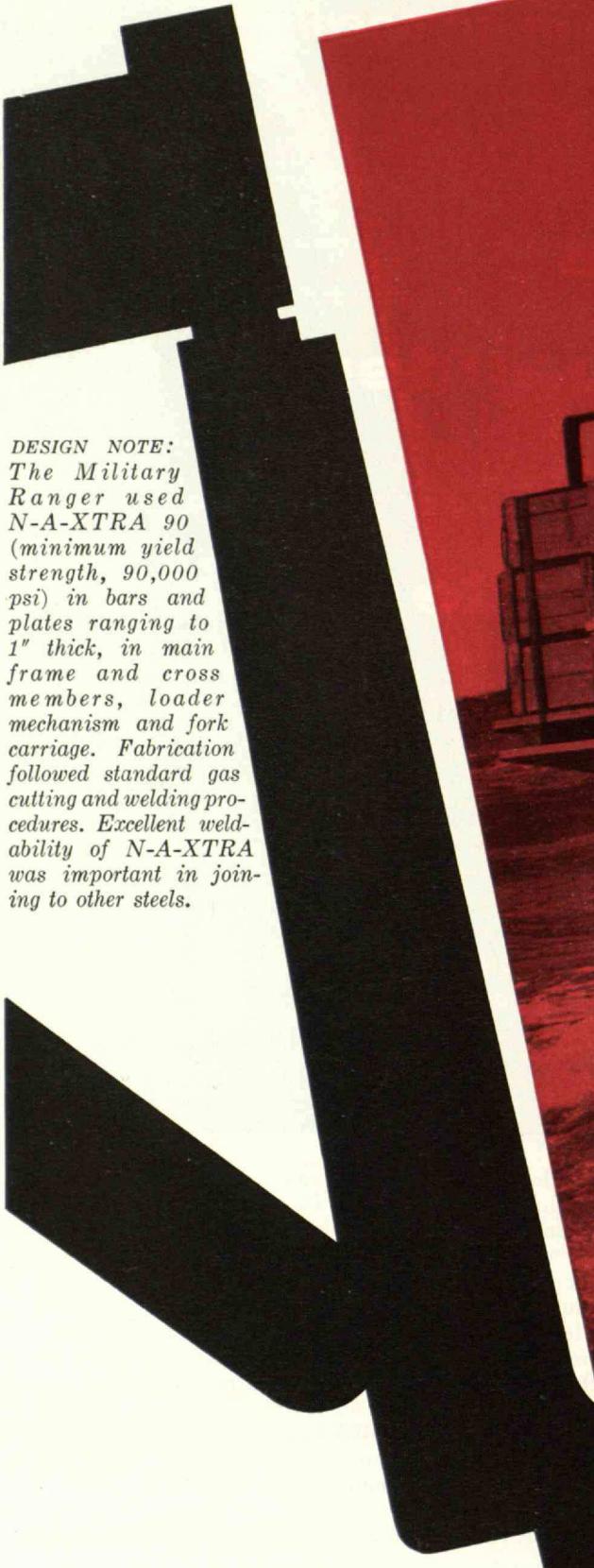
Utilizing its experience as a world leader in lightweight turbomachinery and cryogenic cooling, AiResearch is also developing an all-turbomachinery closed cycle system incorporating a turbocompressor as well as turboexpander.

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**DESIGN NOTE:**  
*The Military Ranger used N-A-XTRA 90 (minimum yield strength, 90,000 psi) in bars and plates ranging to 1" thick, in main frame and cross members, loader mechanism and fork carriage. Fabrication followed standard gas cutting and welding procedures. Excellent weldability of N-A-XTRA was important in joining to other steels.*



N-A-XTRA 90 plates and bars are used in the "Ranger," a rough terrain military vehicle designed, developed and fabricated jointly by the U. S. Army Quartermaster Corps and the Clark Equipment Company, Battle Creek, Michigan. The Ranger series is manufactured by the Industrial Truck Division of Clark Equipment Company.

**Great Lakes Steel is a Division of**

# ROUGH TERRAIN MILITARY FORK TRUCK USES

# N-A-XTRA

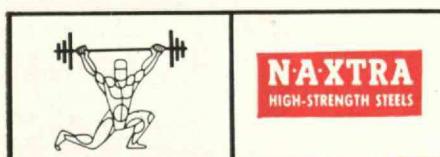
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The U. S. Army Quartermaster Corps and the Industrial Truck Division of Clark Equipment Company came up with the answer—the Military Ranger. It meets or exceeds every operating requirement. And does it within the vital weight limit by using N-A-XTRA 90 high-strength steel in main frame, cross members, loader mechanism and supporting structure. N-A-XTRA handles the job in these high-stress areas, yet weighs three times less than mild carbon steel of equivalent strength.

You may never have to air-lift your equipment, but that's not the only problem N-A-XTRA solves. Rugged operating conditions, heavy loads and weight-saving construction—in such applications as, for example, heavy machinery and pressure vessels—are challenges that N-A-XTRA is designed to meet and beat.

With excellent weldability, formability, and toughness even at subnormal temperatures, N-A-XTRA low carbon, extra-strength alloy steels give superior results with conventional fabricating methods, including cold forming, gas cutting, shearing and machining. N-A-XTRA high-strength steels are available in four levels of minimum yield strength, from 80,000 to 110,000 psi, and in sizes ranging from  $\frac{1}{8}$  to  $1\frac{1}{4}$ " thick, up to 72" wide and up to 35' long. For further information, write Great Lakes Steel Corporation, Product Development, Dept. MDE-16, P. O. Box 7310, Detroit 2, Michigan.



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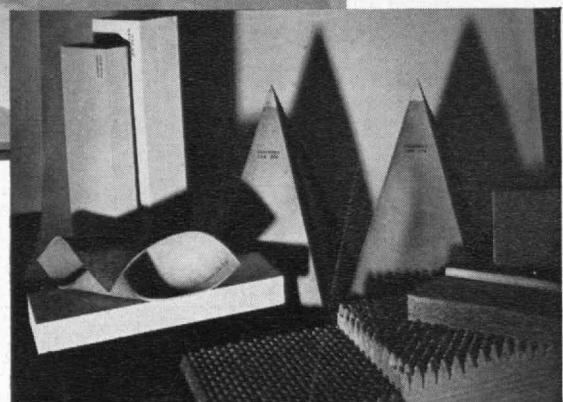
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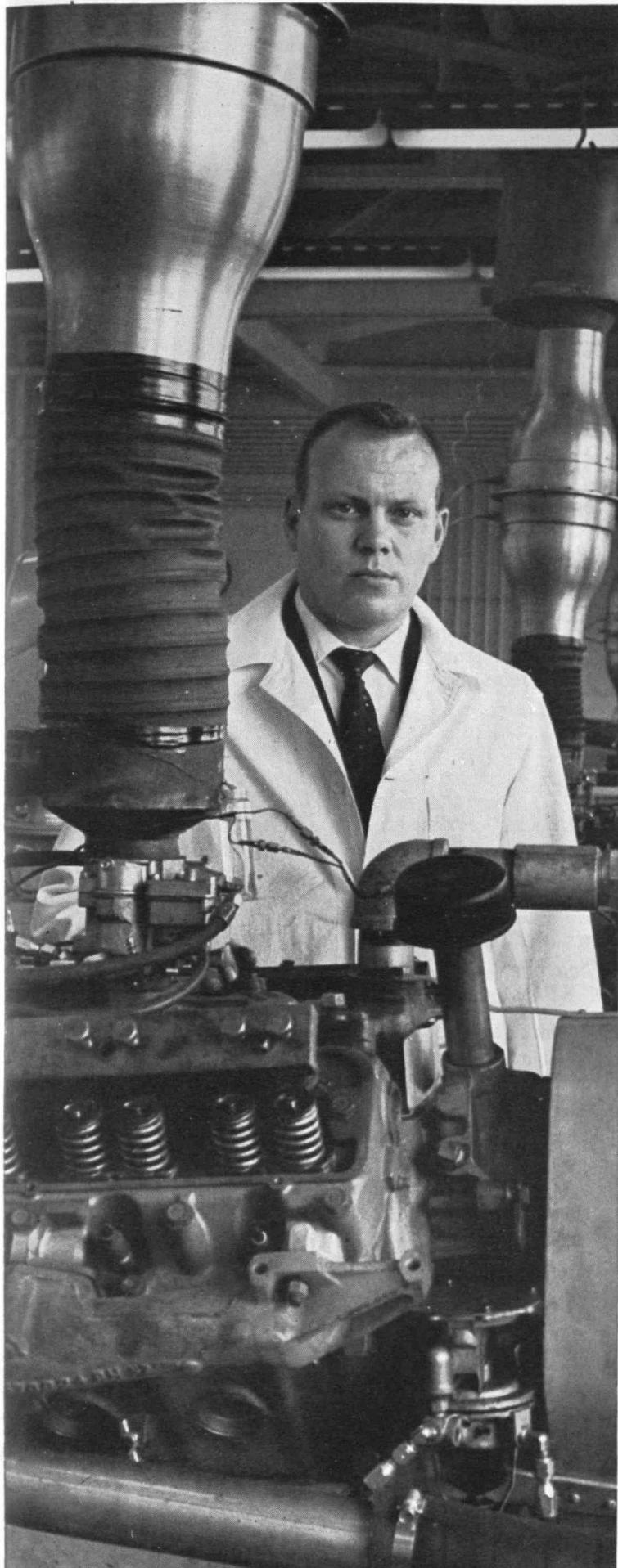
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*by Don Anderson*

"Here you're treated as an individual. The Company respects and recognizes individual achievement. The work is challenging and affords the chance to use your own ingenuity."

That's Don Anderson talking, 31-year-old mechanical engineer engaged in testing lubricants at American Oil Company. Don spent six years in the military service prior to earning his Bachelor of Science degree at the University of Illinois. Don, the father of two children, explains, "The routes to the top are many and varied. There's plenty of opportunity for advancement—and that's the best kind of job security I can think of."

The fact that American Oil attracts talented college graduates like Don Anderson may have special meaning to you as you plan your career. Don is one of many young scientists and engineers at American Oil who are growing professionally in a wide range of research projects. There are challenging opportunities in many areas. Chemists, chemical engineers, mechanical engineers, physicists, mathematicians and metallurgists can find interesting and important work in their own fields.

For further details about the rewarding career opportunities at American Oil Research and Development Department, write to: D. G. Schroeter, American Oil Company, P. O. Box 431, Whiting, Indiana.

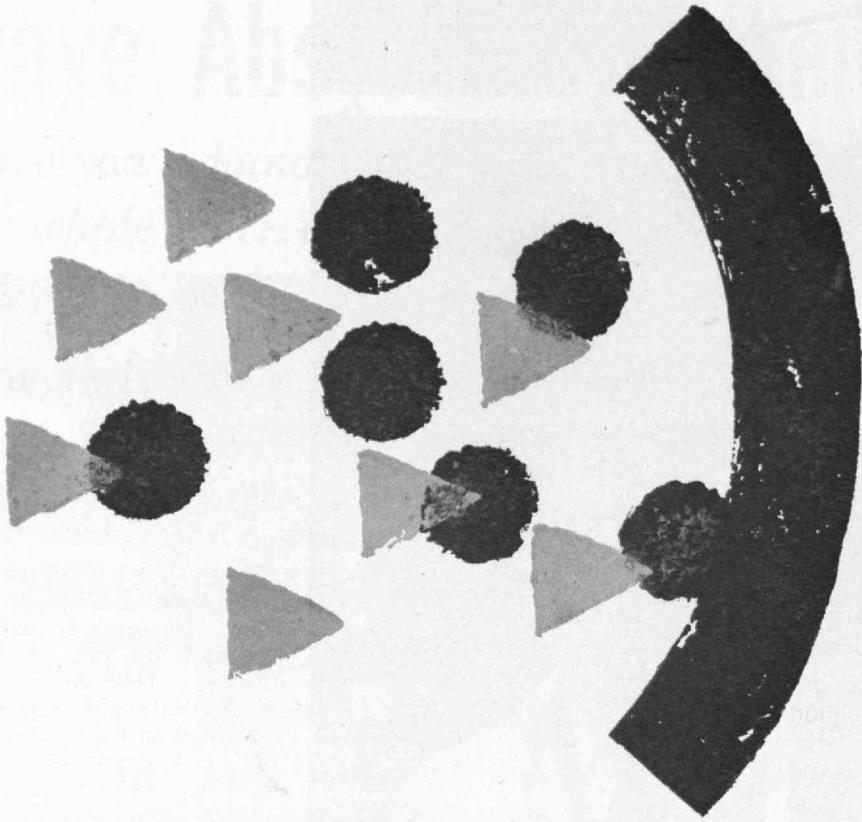
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**Said Michael Faraday:** "The amounts of different substances deposited or dissolved by the same quantity of electricity, are proportional to their chemical equivalent weights."

Increasing requirements for pure, very thin films—especially those of ferro-magnetic elements and alloys—have become critical. To break this bottleneck, one production method under investigation is a chemical process from an aqueous solution—using metallic salts and a reducing agent.

Scientists at Lockheed Missiles & Space Company have conducted some highly successful experiments, in which extremely pure and thin ferro-magnetic film was deposited on such material as glass and plastics.

Thin film deposition is but one of many phenomena now being investigated at Lockheed Missiles & Space Company in Sunnyvale and Palo Alto, California, on the beautiful San Francisco Peninsula. Engineers and scientists of outstanding talent and ability naturally gravitate to Lockheed. For here they can pursue their special fields of interest in an ideal environment.

A leader in the aerospace field, Lockheed is Systems Manager for such programs as the DISCOVERER, MIDAS, and other satellites, and the POLARIS FBM. Why not investigate future possibilities at Lockheed? Write Research and Development Staff, Dept. M-28C, 599 Mathilda Avenue, Sunnyvale, California. An Equal Opportunity Employer.

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# Trend Of Affairs



## Farms for the Future

ACRE FOR ACRE, the world's seas are as rich as its land but we have not mowed them, Professor Columbus O'Donnell Iselin pointed out at the M.I.T. Alumni Council's February meeting. A few equivalents of agricultural experiment stations are needed, he continued, and one could be started in a large salt pond. By regulating the pond's salinity, keeping it stirred, and learning to harvest its nutrients efficiently, he suggested, men might make such a pond more productive of protein than the best Ohio farm land.

Rational usage of the seas is complicated by the maritime nations' interest in keeping them as free as possible, by the refusal of water and fish to recognize unnatural boundaries, and by the slowness with which the water overturns and brings fresh nutrients to the surface. Practical marine fences, Professor Iselin said, probably will be acoustical and easily turned on or off. In addition to obtaining far more food from the seas than we have heretofore, he thinks, it would be possible in some areas now to undertake modest experiments in climate control.

Better forecasting and a marriage between oceanography and meteorology are likely to be the next steps. But, he noted, there were only about 50 oceanographers in 1930, and only about 1500 now. They enabled submarines to fight more confidently in World War II, but thus far have uncovered more problems than they have solved.

Vice-president Philip A. Stoddard, '40, was the second speaker at this Council meeting. He showed slides and answered questions about the M.I.T. building program now under way, and noted that academic and research facilities soon will be centered on one side of Massachusetts Avenue and housing, cultural, and recreational facilities on the other side.

John L. Danforth, '40, reported that science teaching will be the subject of the Alumni Day symposium on June 11, that the Classes of 1922 and 1937 have made Alumni Day an integral part of their reunion plans, and that the price of tickets for the day's events will be lower than it was last year.

Samuel A. Groves, '34, presided; Frederick G. Lehmann, '51, gave the secretary's report; and Gregory Smith, '30, reported that thus far this year the Alumni Fund has received 8,900 contributions totaling \$328,000.

## The Recruitment Picture Now

TWENTY-EIGHT companies' representatives interviewed 300 students on a single day last month as part of their recruitment efforts at M.I.T. This year, it now appears, 500 companies will have sought men among about 1,500 students possibly available. The previous record was 444 companies, and last year the number was down to 398.

Average salary offers also appear to be running higher this year, according to Thomas W. Harrington, Jr., Placement Officer. Offers to men with S.B. degrees appeared in March to be averaging about \$565 a month; to those with S.M. degrees, \$670, and to those with Ph.D.'s \$950. More than half of the Institute's seniors last year went on to graduate school, and the percentage will be high again this year.

Space and electronics are still the glamorous fields. The National Aeronautics and Space Agency, offering only civil service salaries, found many students interested.

Graduates of the School of Humanities and Social Science who have devoted 60 per cent of their time to engineering and science have no difficulty finding jobs. Some of the country's top business schools have sought graduate students at M.I.T., and this year for the first time a law school was among the recruiters.

## Small Boys' Day at M.I.T.

THE Technology Community Association and Alpha Phi Omega chapter at M.I.T. sponsor many community service projects. This year they arranged for students to entertain members of three of the Boys' Clubs of Boston one Saturday. The small boys saw how computers play games, ran the Tech Model Railroad, used the model ship towing tank as a finger bowl, and stuffed themselves with ice cream in an East Campus dormitory.

*Curtiss D. Wiler, '63, took the photo above while the young visitors were touring the M.I.T. laboratories.*

## Second Century Fund Progress

THE AREA ORGANIZATION workers for M.I.T.'s Second Century Fund reported on February 15 having received \$6,722,819, which was 84 per cent of the \$8,000,000 goal set. This was an increase of more than half a million dollars over the sum reported raised on February 7.

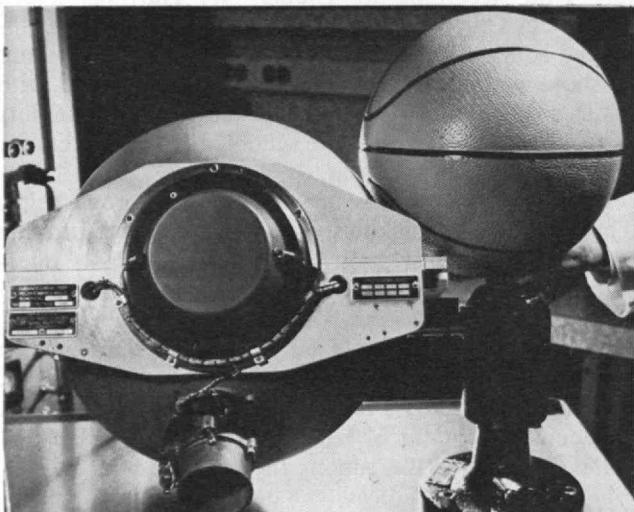
## The New Inertial Guidance System

AN INERTIAL SYSTEM about the size of a basketball guided a Polaris missile down the Atlantic Missile Test Range a few weeks ago as a result of work done in the M.I.T. Instrumentation Laboratory in co-operation with the Raytheon Corporation and the General Electric Company. More than 300 engineers and technicians participated in the Instrumentation Laboratory's development of this new inertial guidance system.

It will be used in an advanced Polaris with a thousand miles more range than the missiles now on nuclear-powered submarines, and will help bring every part of the world within their striking distance.

The new system is not only smaller and lighter than its predecessor, but also more accurate, reliable, and easy to service. Whereas the system developed previously was about the size of a steamer trunk, this one could be put in a drawer of a filing cabinet. New techniques used in it included automatically welded connections between electronic components and a "duco-syn" type of accelerometer which performs dual functions.

This "Mark 2" system also contains two accelerometers of an entirely new type and three stabilizing gyroscopes similar in size and design to those previously developed at M.I.T. and used in the Polaris.



The new Polaris guidance system alongside a basketball.

## Engineering Design and Graphics

IN CO-OPERATION with the National Science Foundation, M.I.T. will be host to a conference of college and university faculty members responsible for engineering design and graphics programs next August 13 through 24.

The role of design in undergraduate engineering education is much discussed currently. One view is that it should play a dominant role because it is the central, focusing theme of engineering. An opposing view is that involvement of the student in design should be postponed until fundamental grounding in the requisite science and mathematics has been achieved. The M.I.T. program in graphics and engineering design attempts to complement engineering course work with design involvement without significant reduction in basic and engineering science course coverage.

## Satellite Relay Problems

JOHN R. PIERCE of the Bell Telephone Laboratories outlined the requirements for transoceanic communication via earth satellites in the final lecture of Lincoln Laboratory's decennial lecture series this winter in Kresge Auditorium. Such communication, he said, calls for new standards of reliability and endurance. To achieve these, both relatively simple projects, which can succeed quickly, must be pushed and the research and development needed for more ambitious projects must be continued.

In addition to reliable vehicles, reliable means of controlling the attitudes of satellites will be essential to progress. Atlas nose cones have been controlled for tens of minutes, and the attitudes of Discoverer satellites have been controlled for a few days. Practical, careful experiments will be needed, Dr. Pierce suggested, to develop means of controlling the attitudes of communication satellites at altitudes of perhaps 7,000 miles for five or 10 years. Station-keeping problems, he continued, should be tackled with the same aims in view, and the choice of ground equipment also will affect the ease and quality of satellite communication.

"At present," he said, "the best of the communication art can provide long-life satellite electronic equipment of moderate power. When considerably larger boosters become available, it may be desirable to use higher powers for some communication purposes. Any sort of broadcasting to ordinary ground receivers would require very high power . . . It seems to me mad even to consider launching high-power equipment until an assured life of a year, and perhaps more, can be demonstrated on the ground."

"Bringing practical, useful satellite communication into being will be a tremendous task, however one looks at it. It will be possible only because of the resources of two extensive and well-supported arts: the art of space, and the art of electrical communication."

As director of research in the Communications Principles Division of the Bell laboratories, Dr. Pierce has been personally concerned with the planning and development of systems such as he discussed.

## Solid State Program for Teachers

M.I.T. will offer a special program next June 25 to July 27 in experimental solid state physics for faculty members from other schools. Equipment developed and experience acquired in a graduate laboratory during the last two years will be drawn on, and the participants will perform experiments involving x-ray diffraction, infrared spectroscopy, magnetic resonance, superconductivity and related work. The Department of Electrical Engineering will conduct the program and those principally involved will be Assistant Professors Arthur C. Smith, Robert E. Newnham, and John Blair, '54, and research assistant James F. Janak, '60.



John R. Pierce

## On Beams of Light

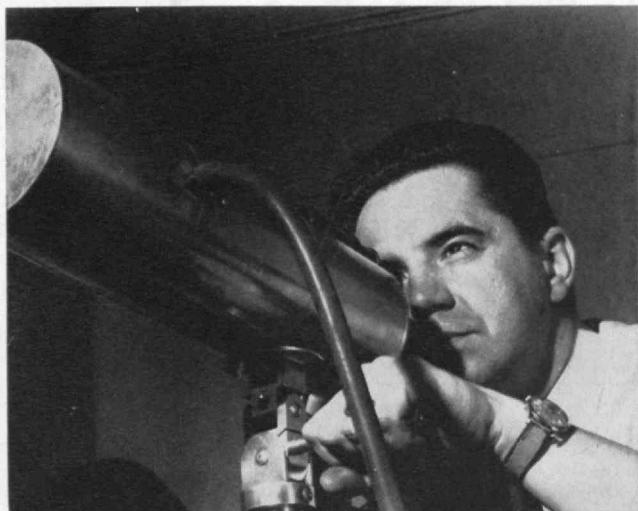
IN THE seventh lecture of Lincoln Laboratory's decennial series the Institute's Provost, Charles H. Townes, described the origins and some of the potentialities of masers. These devices for amplifying electromagnetic radiation by stimulating its emission from atoms or molecules already have greatly reduced the difficulties with noise in advanced communication systems. Now, he noted, they are giving tools to optics such as are used in electronics.

Optical masers are making it possible to measure length and time with great precision and will obviate the need for separate standards. Light from a good maser can be focused on the smallest object that a microscope or telescope can resolve. Its pressure at the focal point can be equivalent to that of 1,000 atmospheres. Optical frequencies can completely dispel bandwidth problems in communication, and it even may be possible to transmit power over light beams.

If there are intelligent beings in other worlds than ours, they may be signaling to us in ways we have only recently begun to understand. Thus far efforts to pick up radio signals indicative of this have failed. "Perhaps," Dr. Townes suggested, "we should be looking at neighboring stars with a good telescope and a high resolution spectrometer, to see if there is any spectral line much narrower than those emitted by normal atoms, which could only be produced by something like a maser."

## A Product of Theory

THE MASER, Dr. Townes noted in his Lincoln Laboratory lecture, epitomizes a great change in technological frontiers because it resulted almost wholly from study of physical theory. It could not have come out of a base-



This maser was developed in the General Electric Laboratory headed by J. Herbert Hollomon, '40, to meet optical radar requirements. It emits 10 bursts of light a second.

ment workshop or have been invented by the Edisonian, intuitive, trial-and-error approach.

Professor Malcom W. P. Strandberg, '48, and other M.I.T. men have figured prominently in the rapid development of masers since Dr. Townes obtained the fundamental patent. There are now many different kinds of masers and one of those most recently announced, a continuous optical maser, was the work of a Bell Telephone Laboratories group and Walter A. Hargreaves, '39, of Optovac, Inc.

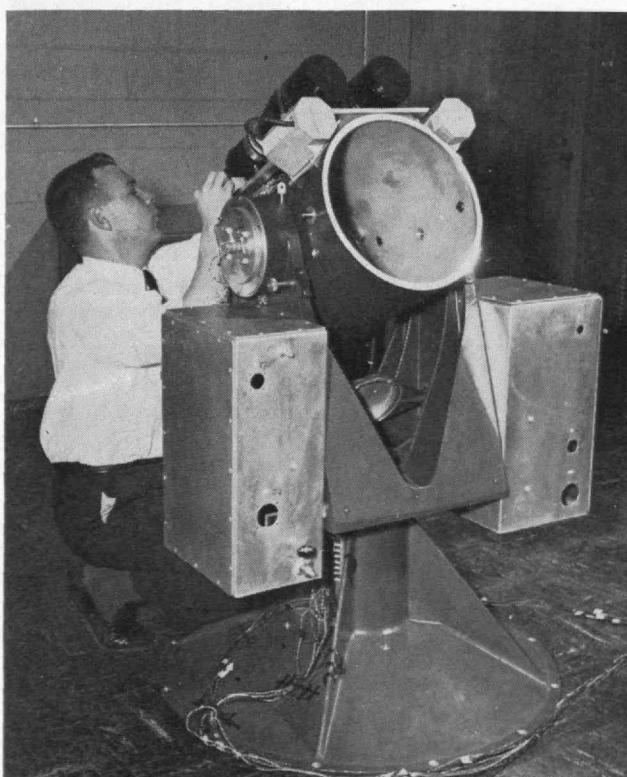
Several hundred laboratories and companies are interested in masers now, and to help Alumni and others increase their knowledge of them, the Institute will offer a special program this summer in optical masers. Assistant Professor Perry A. Miles is arranging this, and both the fundamental bases of masers and the current state of their development will be covered.

## For a High Flying Telescope

A WAY to hold a telescope steady in the swaying, spinning gondola of a balloon has been developed in the M.I.T. Instrumentation Laboratory and was scheduled for use this spring in the Air Force STARGAZER project. Plans for this project called for sending a 12½-inch telescope to an altitude of 87,000 feet and required a system of keeping it trained on a star—a problem analogous to making astronomical observations from a satellite.

The M.I.T. electromechanical feed-back system devised to do the job included two single-degree-of-freedom integrating gyroscopes and two single-axis star trackers. One gyro and star tracker were mounted to sense side-to-side motion and the others to sense up-and-down motion. Provision also was made for men in the gondola with the telescope to switch it from star to star. The system weighed 290 pounds.

Assistant Professor Winston R. Markey, '51, headed the team of engineers who worked on the STARGAZER system in the laboratory headed by Professor C. Stark Draper, '26. Robert M. Bumstead, '56, worked out the electronic requirements; Joel B. Searcy, '57, designed and built the sensitive star-trackers needed, and Richard E. Marshall, '51, directed the design and fabrication of the electronic servomechanisms.



Joel Searcy adjusting the balloon telescope's stabilizer.

## The Big Accelerator Runs

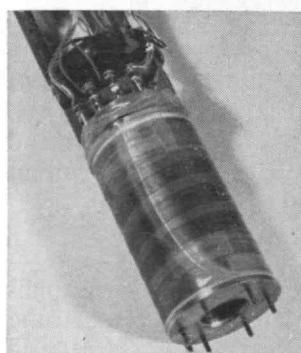
AT 3:30 P.M. on Wednesday, March 7, the Cambridge Electron Accelerator began to produce a 2.2-billion electron volt beam and its 10 operators felt mighty good. The satisfaction of its Director, Professor M. Stanley Livingston, was tempered by his knowledge of numerous small jobs still to be done, but the bulletin board near his office soon was filled with congratulatory messages.

This new \$12,000,000 synchrotron at Harvard was built with Atomic Energy Commission funds and will be used by M.I.T. and Harvard physicists and advanced students. It will produce the world's fastest, most intense, and most energetic beam of electrons. Their speed will be .999,999,996 of that of light, and they will be used to "smash" and study particles in ways analogous to those that atoms have been smashed in other machines. It is expected to make Cambridge an important center in the exploration of the strange world of particle physics.

It employs the strong-focusing system of magnets devised by Professor Livingston and others, a new choke for storing magnetic energy suggested by Professor Edward M. Purcell of Harvard, and other technological and scientific innovations.\*

## Superconductivity's Magnetism

M.I.T. investigators of superconductivity expect to be studying it soon with the help of a magnetic field maintained by superconductivity. This will be a field



The new solenoid.

of 30,000 gauss, which is close to the upper limit for iron core electromagnets at room temperatures. It will be provided by a superconducting solenoid operated at liquid helium temperatures.

This solenoid consists of thousands of turns of fine niobium-zirconium wire, worth \$450 a pound, in which an electric current will encounter no resistance at such low temperatures. Once the solenoid has been energized, its magnetic field will persist without additional power.

This field will be in an aperture an inch in diameter and about four inches long. By placing samples of various materials in it, the researchers hope to measure properties responsible for superconductivity.

Lucien J. Donadieu, '56, who is working now with Professor David J. Rose, '50, designed this new magnet, and the one acquired by the Institute was the first of several such magnets being made by Magnion, Inc., a Cambridge firm headed by William E. Barbour, Jr., '33. It will be used in research being directed by Paul E. Gray, '54, Assistant Professor of Electrical Engineering, and in a graduate laboratory being developed under a Westinghouse grant by Assistant Professor Arthur C. Smith.

\*See Technology Review, June, 1960, page 27, "The Physicists' New Accelerator," and December, 1961, page 29, "The Soon To Be Completed Electron Accelerator."

## Organ Music at M.I.T.

VISITORS to M.I.T. often inspect two examples of modern architecture, the Kresge Auditorium and the Chapel. Each houses a Holtkamp organ which was designed especially for it and quite often a visitor finds both organs in use by students. Victor Mattfeld, Institute organist and Assistant Professor of Music, estimates that there now are two dozen competent student organists at M.I.T.

Overseer and mentor to these practicing musicians, Mr. Mattfeld opened the way for student use of the organs, which he considers to be outstanding examples of contemporary American organ building. The Chapel organ, called a "small-form" organ, accommodates about half the organists and is used daily both for the regular chapel services and practice hours. Students working towards performances may use the great Holtkamp which magnificently fills a high loft in Kresge. The most accomplished of the group have performed in a Sunday afternoon organ series in the Chapel. Informal noon recitals also have been given in Kresge on a "bring your lunch" basis.

A series of four major recitals on the Holtkamp in Kresge has brought two outstanding European organists, André Marchal and Piet Kee, and an American, Donald McDonald, to M.I.T. this year. Heinrich Fleischer, University of Minnesota organist, will close this series with a recital on April 11.

## Reports on Russian Aviation

Civil aviation in the U.S.S.R. is organized quite differently than in the U.S., but has grown rapidly and the Russians are struggling for business abroad. Assistant Professor Secor D. Browne of M.I.T. reported recently in a series of *Christian Science Monitor* articles. Professor Browne was in Europe for six weeks again this winter, and his articles discussed both the organization and growth of air transportation in Russia.

Although Aeroflot carries fewer passengers than our airlines, its routes span more miles, and it is now "the largest single air-transport network in the world," he noted. In jet transport development, the Russians have been said to be "first with the worst," and there is evidence now that they have given high priority to the development of a supersonic transport (SST) to fly at two or three times the speed of sound.

"Two facts," Professor Browne wrote, "are sure: that we will be second or third in the SST race; and that we are capable of producing by far the best airplane. . . . In the present confusion of overlapping responsibilities between government agencies . . . we are likely to find that the real SST race is between the Common Market countries and the Soviet Union."

## The Syracuse Regatta

M.I.T. is one of 14 probable entrants in the annual Syracuse Regatta on Onondaga Lake next June 16. This is the distance rowing championship event for eight-oared crews sponsored by the Intercollegiate Rowing Association each year. Other probable entrants are Brown, California, Columbia, Cornell, Dartmouth, Navy, Penn, Princeton, Rutgers, Stanford, Syracuse, Washington, and Wisconsin.

(Concluded on page 48)

# The Freshmen Get Some Insight

*Photographic glimpses of the new undergraduate seminar program now under way at the Institute*



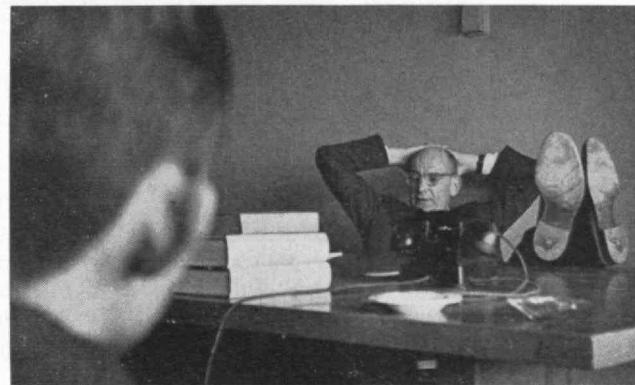
MORE THAN 40 volunteers from the Faculty began meeting with 230 willing freshmen last fall both to become personally acquainted with them and to introduce them to matters they will learn more about later on. Professor Edwin R. Gilliland, '33, Head of the Department of Chemical Engineering, directs this

**BIOLOGY:** Professor Patrick Wall checks source material regarding the nervous system. This group devoted much of its time to finding out how research is done.

new Undergraduate Seminar Program, which is being continued this term. Bob Lyon took these photographs.



**CHEMICAL ENGINEERING:** Professor Gilliland (left) used a bottle of cuprous chloride to illustrate a point regarding chemical processes. Experiments and studies helped the freshmen learn about new production processes.

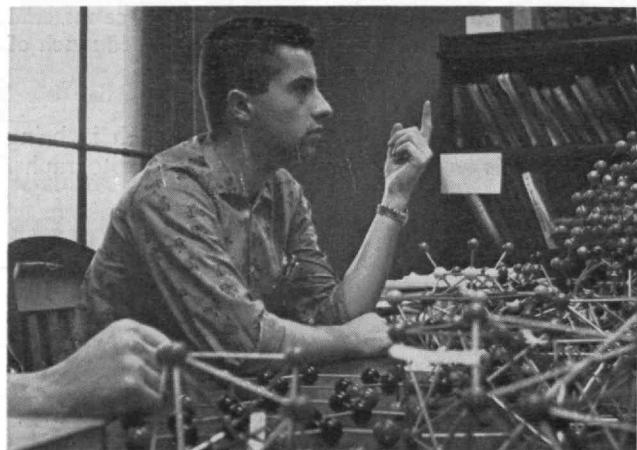


**INDUSTRIAL MANAGEMENT:** Professor Elting Morrison pondered questions posed by his group inspired by wide reading about ways in which the scientific method may be used to increase understanding of human situations.



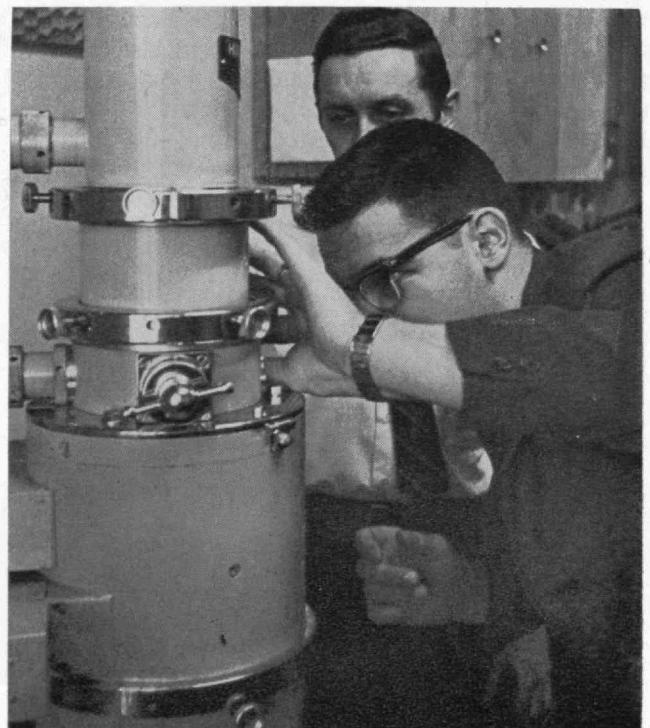
**NAVAL ARCHITECTURE AND MARINE ENGINEERING:** Professor Martin A. Abkowitz, '40 (at right), watches

a member of his group find out how a ship model will behave. A computer fed back data for the students to ponder.



**ELECTRICAL ENGINEERING:** Bob Reichelt, '65, raised a question in a group investigating crystals. Its members toured a variety of laboratories, heard lectures, and wrote papers on crystallography and solid-state physics.

**METALLURGY:** Arthur W. Mullendore, '53, helped his group learn about the crystalline nature of metals. Experiments dealt with high-temperature strength and deformation characteristics. Right: An electron microscope in use.



# Cotton, Slavery and Eli Whitney

*How a product of one man's genius profoundly affected American history in unforeseen ways*

BY ROBERT S. WOODBURY

IN THE SUMMER of 1792 the basically agricultural economy of the South seemed to have a far from bright future. From the beginning, American farmers had practiced the methods of extensive agriculture. Instead of carefully fallowing, rotating crops, and fertilizing their land, throughout the colonies they had preferred careless but more immediately profitable methods made possible by vast and rich land easily and cheaply available. When the productivity of soil was reduced it was easy to take up new land.

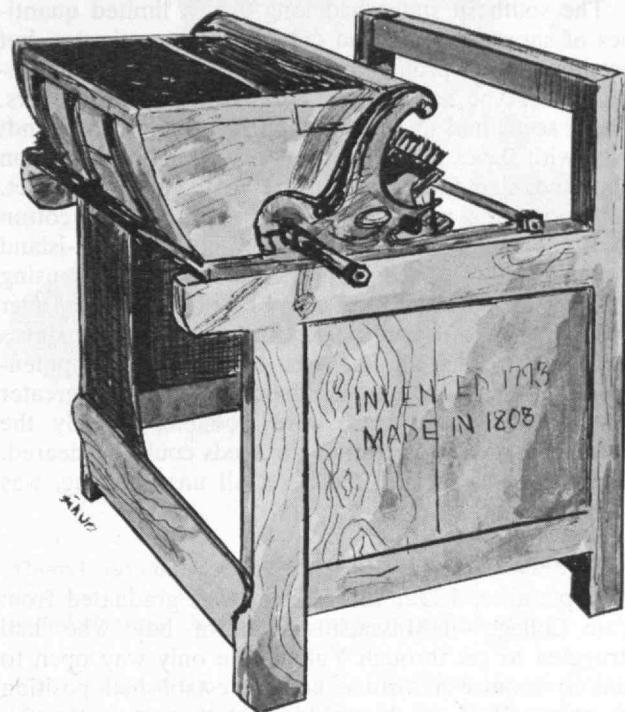
In the South agriculture was based upon a few staple crops: in Virginia, Maryland and the Carolinas, tobacco; in North Carolina, naval stores and livestock; in South Carolina, rice and indigo. Tobacco growing required much labor, and at the prevailing prices for tobacco cheap slave labor was imperative. Rice had to be raised under conditions such that only slave labor was possible, and the production of rice and indigo dovetailed to provide an economic basis for slavery in the Carolinas as did tobacco in Virginia. At this time cotton was raised for home use quite extensively in all the southern states, but production of cotton on a large commercial scale was not possible because of the high cost of separating the seeds from the fiber.

The combination of extensive, wasteful methods and single-crop agriculture led to exhaustion of the rich but thin southern soil. A tobacco field could be exhausted in three to eight years. To be sure, other crops, usually grain, could be planted later, but new land had to be taken up for the profitable tobacco.

Land suitable for growing tobacco and near enough to rivers used for transportation was becoming scarce and the tobacco crops were falling off. The production and sale of indigo and naval stores were no longer profitable because Great Britain had cut off the bounties she had previously paid on them.

Not only was the economy of the South in decline, so was slavery. Leaving aside the humanitarian feelings of many Southerners, among them Washington and Jefferson, the economic disadvantages of slave labor had become so obvious that many important Southerners favored abolishing this institution entirely. The Constitutional Convention of 1789 had seriously considered including a clause forbidding slavery, but

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This cotton gin found recently beneath crates of books in a basement storeroom of the New Haven Colony Historical Society is believed to have been built by Eli Whitney at his Wooster Street, New Haven, factory in 1803.

had compromised on less specific phrases because most members believed that slavery would die out anyway in a few years. By the time Eli Whitney first went south, only the state of Georgia permitted further importation of slaves, and the "best field hands" had fallen in price to \$100 each. In that momentous summer slavery was dying, and the economy of the South was on the verge of a disastrous decline.

The stage was being set for a new era in the economy of the South. By 1760 a series of crucial inventions in England had begun a revolutionary movement in the British economy. Mechanization was applied, in about a generation, to nearly every phase of the spinning and weaving of textiles. Because cotton had previously been the least important of the major textiles in England, it was possible to introduce these innovations most extensively in the production of cotton cloth, and thereby to reduce cost and increase output substantially. As a result, the number of English workers engaged in spinning and weaving cotton increased from 7,900 in 1760 to 320,000 in 1787. Even this rapid growth would have been greater had more extensive supplies of cheap cotton been available. England had to import this raw

material from Egypt, India, and the Far East to meet the insatiable demand.

The domestic production of cotton in the South felt this demand, and efforts were made to increase it. Production of the long staple sea-island cotton began in the limited areas of Georgia and South Carolina suitable for its growth, and by 1790 more than 2,000,-000 pounds was being exported annually. The seeds of this type of cotton adhere only loosely to its long fibers and were easily removed mechanically by a simple roller gin resembling a laundry wringer. But this cotton would grow only in a very limited area.

The southern states had long grown limited quantities of short staple upland cotton for domestic use, but production for profitable export was not possible because this type had seeds closely adhering to the fibers. These seeds had to be painstakingly removed by hand; even with slaves this process made the cost of the cotton fiber too high for it to compete in the world market. Separating the seeds from a pound of upland cotton took one "hand" about a day; 10 pounds of sea-island cotton could be done in the same time. Yet by using slave labor, upland cotton could be raised cheaply over wide areas of the South. The land was there, the slaves were there. The market was known and its potentialities were clearly tremendous. Profits even greater than those from tobacco were possible, if only the bottleneck of the removal of the seeds could be cleared. The stage was set and the hero, all unsuspecting, was about to enter.

### The Man, the Time, the Place

In September, 1792, Eli Whitney was graduated from Yale College—a Massachusetts farm boy who had struggled to get through Yale as the only way open to him to acquire a fortune and an established position in society. Having achieved his goal after years of painful effort, he had difficulty making up his mind about

Eli Whitney

COTTON GIN

Patented March 14, 1794

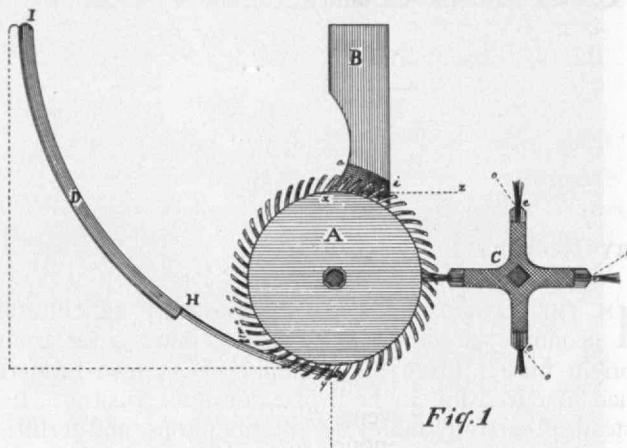


Fig. 1

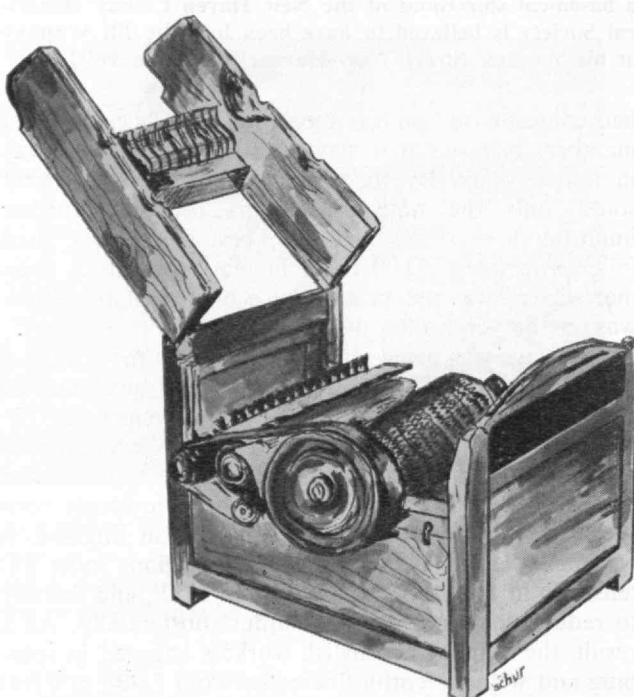
The cotton gin of today does not differ in any essential respect from the one Whitney described in 1794.

a career. Few opportunities were open in the then hard times and he drifted into a position as tutor to the children of Catherine Greene. She was the widow of General Nathanael Greene, Revolutionary hero, who in 1785 had been given the great estate of Mulberry Grove by the grateful people of Georgia. Greene had died soon after his first efforts to restore the estate, and his widow had turned to another Yale graduate, Phineas Miller, who struggled to put the Greene finances and estate in order. It was through Miller's interest that Whitney went to Mulberry Grove in 1792.

Whitney was introduced there to the society of a number of influential planters who were much concerned with the economic future of the South and their own plantations. During the course of conversations the possibilities of cotton were raised, and Whitney's Yankee curiosity and mechanical ingenuity were aroused. He says in a letter to his father (dated September 11, 1793, when the development of his cotton gin was already well along): "During this time I heard much said of extreme difficulty of ginning cotton, that is, separating it from its seed. There were a number of very respectable gentlemen at Mrs. Greene's who all agreed that if a machine could be invented which would clean the cotton with expedition, it would be a great thing both to the Country and to the inventor." For Whitney, who had perhaps heard something of the possibilities of cotton from President Ezra Stiles while at Yale, this was the spark needed. "A great thing both to the Country and to the inventor" was what Whitney had gone to Yale in the hope of achieving for himself, and ingenious machinery was something in which he already had shown some proficiency back on his father's farm.

Within a few days he had the germ of the solution to the problem; all that remained was to work it out. He first made a model. By June 1, 1793, he had completed a full-size machine "which required the labor of one man to turn it and with which one man will clean ten times as much cotton as he can in any other way before known and also clean it much better than in the usual mode."

Whitney's correspondence shows that he had high hopes for his own reputation and fortune from this



This model in the New Haven Colony Historical Society's collection comes close to the patent specifications.

invention. Neither of these hopes was to be realized in the way he expected, and it is best not to revive the painful besmirching of his name and the cheating loss of his just remuneration which grew out of his efforts to put his invention on the market.

### Piracy Made Easy

Whitney's cotton gin was a simple device. Its very simplicity permitted easy piracy and this, taken with the profits to be made from its use, made inevitable the loss of the fortune and prestige that Whitney hoped it would bring to him.

As shown in his patent of March 14, 1794, his invention consisted of: a rotary cylinder (A) carrying the teeth which pick up the fibers of the cotton; a breast-work (B) which prevents passage of the seeds through openings only wide enough to permit the teeth and the fiber to pass; a cleaner (C), a rotating set of brushes which remove the cotton fibers from the teeth; and a hopper (D) to feed the cotton to the teeth and to take care of the seeds.

The raw cotton is dumped into the hopper as fast as the gin can accept it. The rotating teeth on the cylinder, set at an angle of 50 to 60 degrees, pick up the fibers of the cotton, together with the seeds adhering to them. The teeth in Whitney's first model and those described in his patent were cut on a special machine, driven into the wooden cylinder, gauged and turned off to size. Later Whitney was able to produce them more simply in the form of a circular saw. The teeth then carry these fibers to the breastwork, also set at an angle—less than 50 degrees—by which part of the cotton fiber slips off the teeth and keeps the raw cotton tumbling in the hopper. The slots in the breastwork fit the teeth closely enough to prevent passage of the seeds, but with sufficient clearance to allow the teeth to carry the fiber through.

The fibers now held on the teeth are brushed off by the rotating brushes of the cleaner. To give greater efficiency these teeth are set at an angle of 20 degrees to the axis of the cleaner (not shown in the patent drawing, but included in the specifications and in the New Haven model). The cleaner, although of about the same diameter as the toothed cylinder, rotates at a speed two to three times greater, to enable the brushes to remove the cotton from the teeth and to give the freed cotton sufficient force so that it does not wind up on the cleaner. The ginned cotton can then drop down to the bottom of the gin, or in commercial installations, usually through a hole in the floor directly to a baler. Whitney even suggested that his cotton gin could be combined with a carding engine and so feed directly to a spinning frame.

In the early cotton gins it was necessary to stop the gin at intervals to allow the accumulated seeds to drop out of the hopper, but this feature was later corrected.

The patent specifications show that Whitney had devoted much care and experimentation to the exact design of several features of the cotton gin to give it great efficiency. He even gives full details of how to make it and suggestions for further possible improvement. The cotton gin today does not differ in any essential respect from the one he described in 1794.

The practical Whitney proceeded to make a model to test his design. He evidently made several, for one

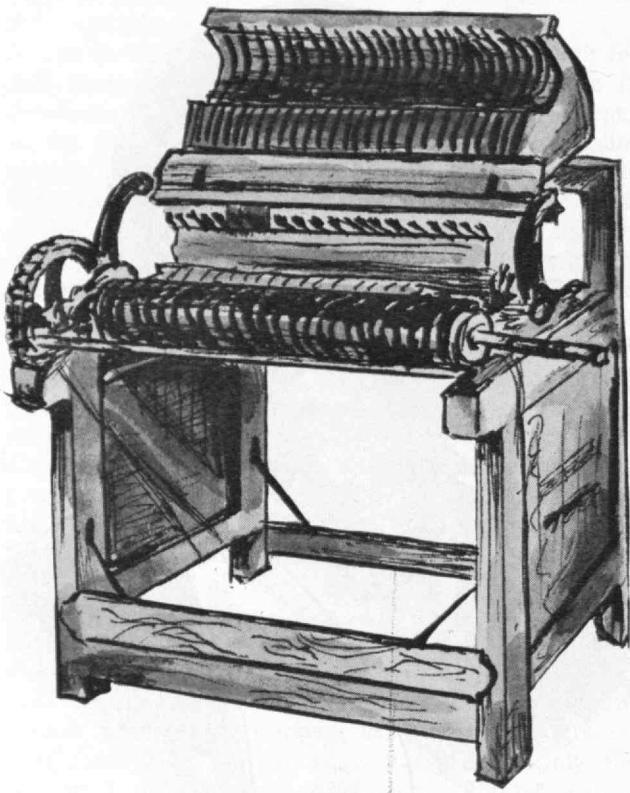


**There is no doubt, says Professor Woodbury, that Whitney was one of the great men of history, but his invention halted slavery's decline and made it profitable.**

is to be seen in the collections of the New Haven Colony Historical Society and another in the Smithsonian Institution. The Smithsonian model has three different kinds of teeth and was therefore probably made later for use in defense of his patent in the southern courts. Neither of these models exactly fits the description of the cotton gin given in the specifications of his patent, but the model in the New Haven Colony Historical Society's collection comes closest. We cannot be sure that it was his first model, made "about ten days after my first conception of the plan." It is quite possible that it is the model he made to obtain his patent and which he showed to President Stiles in February, 1794.

Before that date, however, Whitney had proceeded with the construction of full-scale models of his cotton gin, as he said, "Not above one third so large as the Machines may be made, with convenience. The cylinder is only two feet two inches in length and six inches in diameter. It is turned by hand and requires the strength of one man to keep it in constant motion. It is the stated task of one negro to clean fifty Wt. (I mean fifty pounds after it is separated from the seed) of the green seed (upland) cotton pr. Day . . . for ten or fifteen Days successively he had cleaned fifteen hundred weight in about four weeks, which cotton was examined in N. York, the quality declared good, and sold in the market at the highest price. . . ."

This machine was completed by June of 1793, and by February of 1794 Stiles tells us that Whitney had "completed six large ones, Barrel perhaps five feet long . . ." capable of cleaning "100 cwt. a day."



**This large 1808 model had a gear drive, although Whitney preferred a belt in his patent and early models.**

Clearly in early 1794 Whitney's cotton gin was already available on an industrial scale.

Although not so large as these, we do have a full-scale machine of a size comparable to Whitney's first full-size model in the "stand" recently discovered by Ralph W. Thomas in the collections of the New Haven Colony Historical Society. This machine has two features mentioned in Whitney's patent of 1794, but not embodied in the earlier small-scale models—a different type of breastwork, and means by which the cleaned seeds could be recovered from the hopper without interrupting the process of ginning the cotton. The working models all had a belt drive, which Whitney clearly preferred in his patent specification. This large model of 1808 has a gear drive but these gears are clearly of a later date.

### The Aftermath of 10 Days

The invention of the cotton gin was not only of tremendous economic and social import, but equally unusual as an example of the inventive process. Entirely without preceding stages of development, it sprang practically full blown from the genius of one man—Eli Whitney. In 10 days he had the basic idea embodied in a working model. Six months after his first acquaintance with the problem he had a solution working on an industrial scale. No other man helped him on its technical features, though Miller supported him financially. Surely no inventor deserved an ample cash reward more than did Eli Whitney. He was not to receive it. The sums he did receive for his cotton gin were all expended in futile attempts to get the rights his patents were supposed to grant him and in the even more desperate fight to prove his originality and pri-

ority in the invention, to say nothing of clearing his name of the slanders thrown at him by greedy men.

History was to be more fair to Whitney, and every schoolboy knows him as the inventor of the cotton gin, even if the economic and social consequences of this invention are not so widely known.

The effects of Whitney's cotton gin were quickly seen in many aspects of the life of the South. Probably no other single invention has so profoundly affected the history of the United States.

Cotton became the leading southern crop almost immediately and soon became by far the most important factor in the agriculture of the South. It became the most valuable single export of the United States, and the profits from it made it certain that the basic economy of the South would be agricultural for another hundred years—and a predominantly one-crop agriculture as well. Cotton culture spread rapidly from Georgia and South Carolina into Virginia and North Carolina, and over the mountains into Tennessee. The westward movement into Alabama and Mississippi was in search of new cotton land, and by the outbreak of the Civil War cotton had reached the great central plain of Texas. Commercial cities built on the cotton trade grew up; Charleston and Savannah ceased to be centers of southern trade and wealth as they were replaced by Memphis, Mobile, and New Orleans.

As a result of this predominance of cotton, the great advances in manufacturing, agriculture, and in expanding commerce scarcely touched the South. In the year that Whitney invented his cotton gin the population of the United States was about evenly divided between North and South. By the outbreak of the Civil War two-thirds of the Americans lived in the North and produced three-quarters of the wealth. The South's industrial backwardness can be traced directly to cotton and Negro slavery.

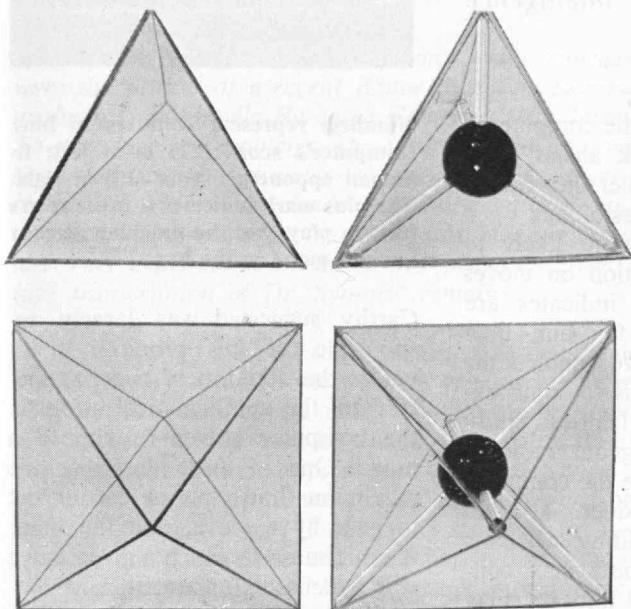
The effect of the increased production of cotton on the textile mills of Britain and New England was enormous, too, and cotton affected even the French economy and the port of Le Havre. The manufacture of cotton textiles led and set the example for industrialization of many other fields in nearly every country.

The social effects of this industrialization are still with us, as are the results of the revival of Negro slavery, which was again made profitable by Whitney's cotton gin. The number of slaves rose from about 700,000 in 1790 to nearly 4,000,000 in 1860.

The enormous increase in cotton production required, of course, an expanded supply of labor. The supply of free, white laborers for wages was totally inadequate and not suited to plantation agriculture. The cotton planter, therefore, had no choice but to assure himself of an adequate and controllable labor supply by the expansion of an already existing institution. The plantation and Negro slave labor were thus the inevitable outgrowth of the conditions of the time, place, and circumstance, even though both had certain obvious disadvantages. By the time of the Mexican War, slavery, instead of dying out, had become a necessary element of the southern economy.

There is no doubt that Eli Whitney was one of the great men of history, but one may question whether we should be entirely grateful to him for human results which he could not, of course, have foreseen.

# The Mathematics of Crystals



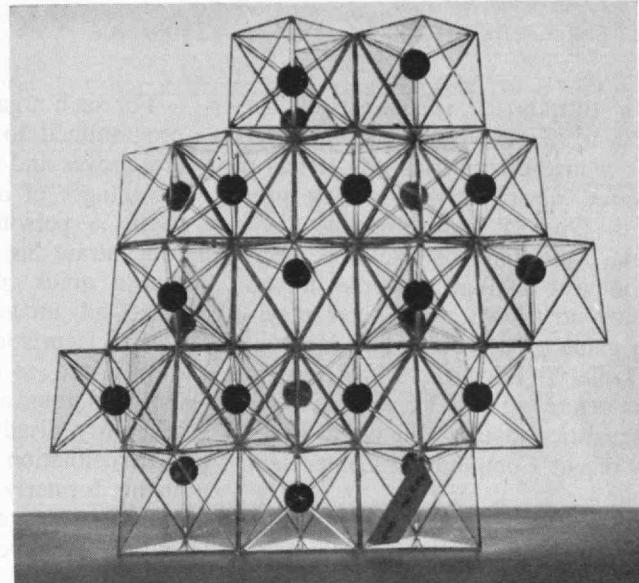
When these octahedral and tetrahedral blocks are packed together as models of crystal structures, the points at

WHILE relaxing one hot afternoon before resuming work on a problem in crystallography, Associate Professor Arthur L. Loeb tried to envision an octahedron resting on one of its eight triangular faces. Evoking and retaining such a mental picture was difficult, and this realization prompted him to make a set of small, transparent building blocks.

Some of these blocks are octahedral and some are tetrahedral. With a set of them in front of you, to represent the interstices between the atoms and ions of a crystal, it is easy to visualize the three-dimensional arrangements of atoms and ions in the crystal. Dr. Loeb's blocks are so much larger than what they represent that you would need a pile of them as high as Mount Everest to represent all of the interstices in a barely visible crystal of salt. But with only a few dozen blocks you can quickly put together models representative of the repetitive structures of many different kinds of crystals.

The organization of information, as in, for example, the Periodic Table of the Elements, often has made it easier to master and extend that information. The ways in which Dr. Loeb's blocks can be packed together—and the ways atoms and ions are stacked in crystals—can be described, he has now found, in a binary algebra. This symbolic language makes it easier for both people and electronic computers to remember how crystals are built.

*Work with these blocks led to the crystograph shown on the cover, in which a binary algebra is used to describe the structure of crystals*



which corners meet represent atoms or ions; a sphere in the center of a module indicates an interstitial ion.

With it, in fact, one can quickly construct models of many crystals and correlate their structures with their chemical formulae.

The three co-ordinates used in this mathematical description of crystal structures are those of a hexagonal prism rather than those of a cube, and Dr. Loeb now explains the terms and advantages of this kind of mathematics with the help of a new "crystograph."

The crystograph is a six-sided plastic plane containing hundreds of tiny electric lights. They are controlled by 13 switches. With those switches, the lights on this plane can be lit in patterns that correspond to those that x-rays have revealed in certain crystals. (The crystograph is pictured on The Review's cover.)

The little blocks which he developed earlier are now being made and sold as teaching aids by Therodyne Corporation of Cambridge. The crystograph, built under Ralph Casale's direction in the M.I.T. Department of Electrical Engineering, seems likely to become a similar aid.

The crystograph already has been to Harvard. Dr. Loeb's new approach to nature's structures has aroused interest among the psychologists there who are studying the learning process in humans, and he is now co-operating with them in an effort to program a teaching machine to teach crystallography. He will also use the crystograph in a special summer program in the "Structure of Materials" to be offered this summer at M.I.T.

# Playing the Game Like a Man

An M.I.T. computer uses heuristics to beat students at kalah, an old pebble game now used to study artificial intelligence

A HEURISTIC, as students of artificial intelligence use the word, is a method or trick that tends to speed up a problem-solving process. One of their objectives is to make machines behave more nearly the way intelligent people do, and they now have a computer playing a game more nearly like a person. Daniel J. Edwards, '59, a research associate at M.I.T., explained the heuristics involved in doing this at a recent Computation Center seminar.

The game is kalah, a popular version of an old pebble game. Each of two players has a row of six pits and a scoring bin, and starts with a fixed number of counters in each pit. By turns, the players redistribute their counters in accordance with simple rules to get as many as they can into their scoring bins.\*

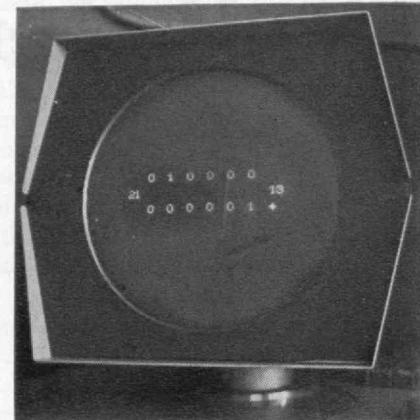
When the players start with three counters in each bin—the way children often play kalah—there are about  $10^{24}$  possible positions on the board. In checkers there are some  $10^{40}$  such possibilities and in chess about  $10^{120}$ . Computer programmers became interested in kalah many months ago, partly because of its simplicity and the scantiness of literature about it, and the PDP-1 (Programmed Data Processor) computer at the Institute is now a veteran kalah player.

\* See "You, Too, Can Play Mancala," Technology Review, January, 1962, page 32. To play, you take counters from whatever pit you wish on your side of board and sow them to your right, placing one in each hole. If the last one falls in your scoring bin, you get another turn. If the last one falls in an empty pit on your side of the board, you capture all of your opponent's men in the pit opposite that one. The game ends when all pits on either side of the board are empty.

For such a game, the computer is programmed to "look ahead" several moves and consider the relative advantages of all possibilities open to it. A person is more likely to concentrate his attention on moves that a quick glance indicates are more advantageous for him than others. Heuristics have enabled the PDP-1, too, to do this to some extent and thus avoid fruitless study of clearly disadvantageous moves.

In a situation where the computer might formerly consider 414,000 positions before deciding what its move should be, it now may consider less than 4,000 and yet play equally well. Heuristics, in other words, have pruned the "tree" of future possibilities considered by the machine, and thus have enabled it to play with more apparent ease and alacrity.

A heuristic called the alpha-beta technique that Professor John Mc-

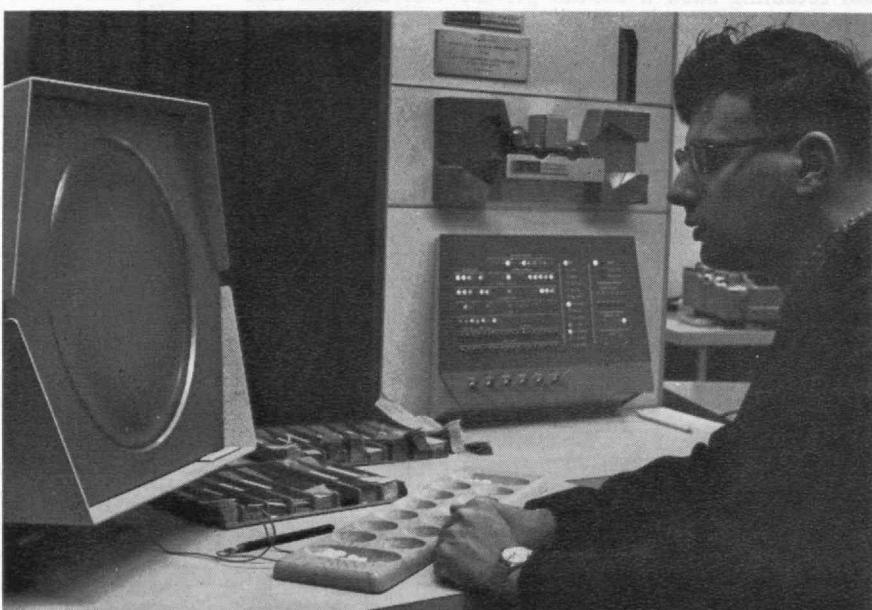


Numbers represent counters in bins. Computer's score (21) is at left; its human opponent's score (13) at right. The plus mark indicates it is the man's turn to play, but the machine already has this game in the bag.

Carthy suggested was largely responsible for this pruning. It involves the addition of two parameters to the mathematical problem the computer solves to choose a move. One of these describes the maximum that a player can expect to gain by a move, and the other, the minimum to which a given move will benefit his opponent.

Another heuristic called "the plausible move generator" has also proven helpful. This involves consideration of the possibilities, first, of capturing counters from the other fellow; second, of getting an extra turn to play; third, of avoiding loss

(Concluded on page 38)



People often play kalah with beads and a board like one in foreground. The PDP-1 (in center) plays it by flashing numbers on an oscilloscope.

# Why and How Water Is Treated

BY JAMES M. SYMONS, '55

Assistant Professor of Sanitary Engineering

TECHNIQUES of alleviating the nation's water shortages were the subject of a recent Water Filtration Seminar at the Johns-Manville Research Center in New Jersey. To introduce the problems, Dr. Symons of M.I.T. outlined the principles of water treatment. These are principles with which many leaders in American communities now facing water problems are insufficiently familiar. This explanation of them was prepared from a tape transcription of Dr. Symons' remarks:

A GOOD WAY to start off such a seminar as this would be to give a brief review of the general principles of water treatment, taking as an example the treatment of a colored, turbid, water by what I might call a standardized water treatment plant.

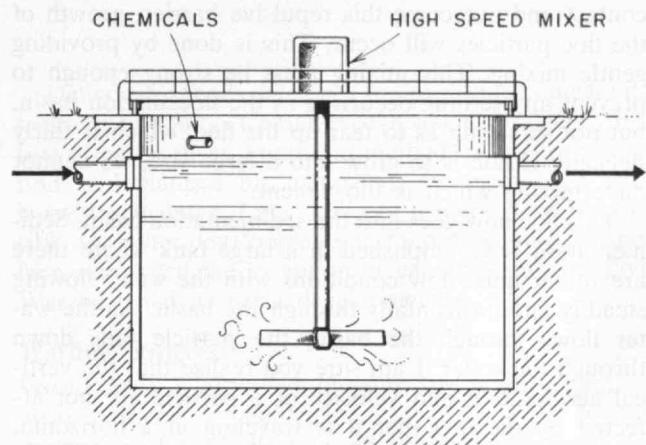
Why do we have to remove color and turbidity from water in the first place? Turbidity is removed for two reasons, one is aesthetic and the other is bacteriological. Most people do not like to drink turbid water. They want something that is clear, not cloudy. I think a prominent example of this is that people usually won't drink water out of a glass that previously has had milk in it, because it is cloudy. From the bacteriological point of view, the tiny colloidal particles that cause turbidity can protect bacteria. They can be at the center of these colloidal particles and therefore can be protected from disinfection. If the turbidity particles were not removed, these particles might break open later, in the distribution system, releasing these bacteria from the water and thereby causing illness. So, there are really two reasons for the removal of turbidity, aesthetic and bacteriological.

The removal of color is for aesthetic reasons only. Natural color in water is yellowish-brown. It comes from the leaching of organic material from leaves as water travels over the ground into the collection system. This color is aesthetically displeasing. In general, removal is accomplished by adding some coagulant to the water which reacts with the colloids causing color and turbidity.

The general scheme of water treatment consists of six unit processes: 1) rapid mix, 2) coagulation, 3) flocculation, 4) sedimentation, 5) filtration, and 6) disinfection. I will speak briefly about each of these processes.

Rapid mix, which is the first step, has two purposes, one is to disperse the chemicals rapidly throughout the water being treated, and the other is to bring into contact the negatively charged colloids that exist in the water and the positive trivalent ions from the coagulant. If alum were used as a coagulant, it would dissolve

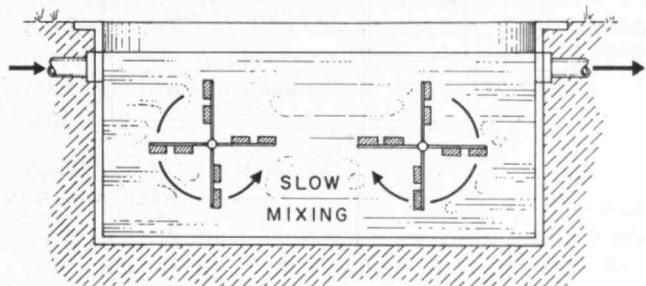
Today's plants have six standardized processes to make it attractive and bacteriologically safe



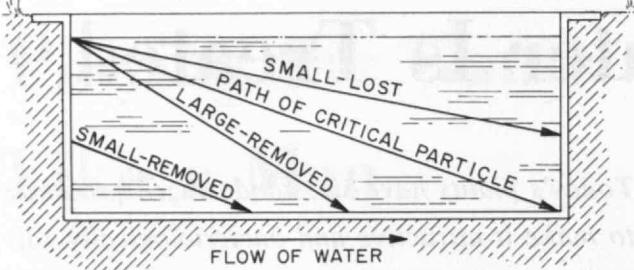
Rapid mixing brings the charged particles together.

in water to yield trivalent positively charged aluminum ions. These would, of course, be attracted to and tend to neutralize the charge on the negatively charged colloids. It is important, however, to cause contact between the colloids and the charged aluminum ions. The rapid mixer, by dispersing the chemicals quickly and completely throughout the water, has the purpose of bringing together these charged particles.

Coagulation is a chemical process during which the tiny precipitated coagulant forms. This then goes to the flocculation basin. The purpose of flocculation is to allow these tiny precipitates to grow into large floc particles. This is done through mixing, which provides velocity gradients in the water. This is very important, because these tiny little precipitates all have a low but like charge, and as such would tend to repel each other and not tend to come together. If some kinetic energy can be imparted to these particles through gentle mixing, this repulsive force due to the like charges can be overcome and these tiny precipitates will contact one



The flocculator allows precipitates to grow into floc.



### Sedimentation gives large floc a chance to settle out.

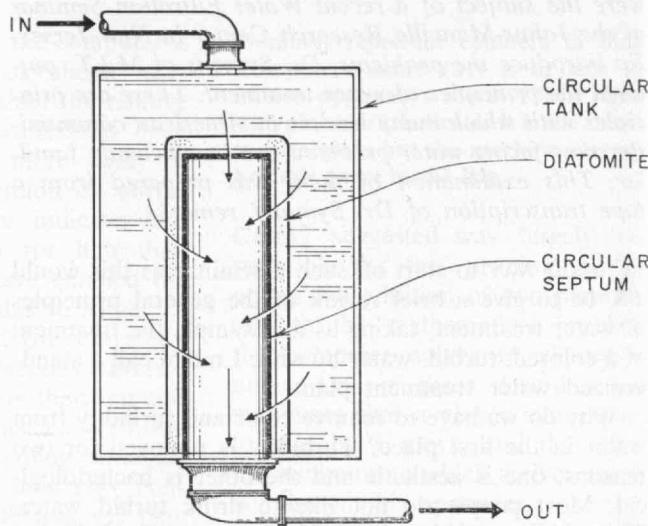
another. Once they are in contact, powerful attractive forces will tend to hold them together. Therefore, if they contact and overcome this repulsive barrier, growth of the floc particles will occur. This is done by providing gentle mixing. This mixing must be strong enough to prevent any settling occurring in the flocculation basin, but not so strong as to tear up the floc, which is fairly delicate. If floc is to grow into a large size, we cannot have mixing which is too violent.

This floc now goes into the sedimentation basin. Sedimentation is accomplished in a large tank where there are rather quiet flow conditions with the water flowing steadily and horizontally through the basin. As the water flows through the basin, the particle falls down through the water. I am sure you realize that the vertical acceleration and velocity of a particle are not affected by the fact that it is traveling in a horizontal direction. There is a velocity vector in the horizontal direction, a velocity vector in a vertical direction and the resultant direction is a diagonal path from the point where the particle starts, as it comes into the settling tank, down toward the bottom of the tank.

The concept of overflow rate has been developed for design purposes and I would like to take a minute to talk about that. These particles are falling down through the water vertically. Neglect for the moment the fact that they are traveling horizontally, since that has no effect. One can think of a graduated cylinder with the particles falling down through the water. The behavior of these particles due to drag forces and so forth would be identical if the particles were falling through the water, or the particles were standing still and the water was moving up past them. The concept of overflow rate is that a particle is falling vertically through the water, but one can think of it as if the water were rising up

past the particle. So, in spite of the fact that there is no vertical flow in a horizontal flow settling tank, one can design it on the basis of overflow rate, which is really a velocity in the upward direction.

The critical particle with respect to settling has been defined as the smallest particle which can start at the very top of the settling tank at the inlet end, and just reach the bottom of the tank at the outlet end, where it is removed. Particles that are larger than this critical particle would fall faster and therefore would definitely be removed by settling. Particles that were smaller than the critical particle would fall more slowly and would not reach the bottom by the time they got to the outlet end. This is not the whole picture, however, because some of the particles that are smaller than the critical

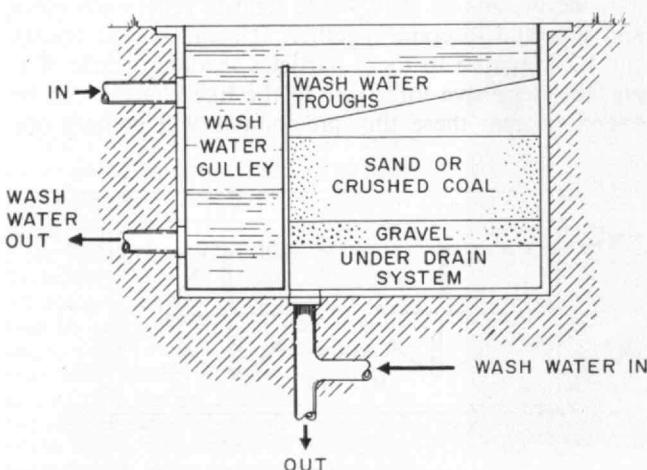


### Mechanical straining is important in diatomite filter.

particle can be removed since they may not start at the top of the tank. If they start somewhere down near the bottom of the tank at the inlet end, even if they fall very slowly and have a very flat resultant path, they reach bottom, since they don't have very far to fall. Therefore, we can say that all of the particles that are equal to or greater than the size of the critical particle are removed, and some fraction of the particles that are smaller than the critical particle are also removed, those that start somewhere down from the top of the settling tank. When an upflow settling tank is used, few, if any, of these smaller particles are removed; they escape to the filters.

The next unit process is that of filtration. The purpose of filtration is twofold. One purpose is to remove the fine floc that escaped from the settling tank, and the second is to remove the cysts of the organism, *Endamoeba histolytica*. This organism is the causative agent of amoebic dysentery and can form a cyst which is very resistant to disinfection. If this cyst could not be removed in filtration, it is possible that it would escape in the effluent water from the water treatment plant and tend to cause illness and disease. Therefore, it is important to have this cyst removed during filtration. There are two kinds of filters, granular filters that use either sand or crushed coal for the filtering media and diatomite filters.

In a granular filter using either sand or crushed coal  
(Concluded on page 46)



### Granular filter produces sedimentation and impingement.

# Another Revolution in Foods

*Freeze dehydration is a promising technique now contributing to a big industry's growth*

BY SAMUEL A. GOLDBLITH, '40

Professor of Food Science and Technology

THE FOOD INDUSTRY, with an annual gross sales level of more than 80 billion dollars, is the largest single segment of our national economy. Technological developments during the last decade, coupled with a rising standard of living, have been largely responsible for its increasing growth rate. Further expansion seems likely because of the American homemaker's desire and demand for convenience and quality built right into her food packages. More and more women have outside jobs, engage in community activities, and demand high standards. Such sociological trends, comparable in force and impact to the industrial revolution of yesteryears, have been responsible for much of the food processing industry's growth.

The generation of Americans born in the 1920's has seen the birth, development, and growth of this industry's frozen food segment. Although one can find references to commercial freezing a century ago, this method of processing did not come into wide use until the 1930's. (It was a result, largely, of the developments of Clarence Birdseye.) In 1939, 300 million pounds of frozen foods were produced and sold in this country. By 1945 production was tripled, and by 1960 the production of frozen food rose to 6.5 billion pounds.

Our generation also is seeing a renaissance in the development of dehydrated foods. Both freezing and dehydration are methods of modifying the environment of the foodstuff to ensure that there will be no growth and development of spoilage organisms. Low temperatures prevent the growth and development of bacteria when food is frozen, and removal of the vital element, water, does this when it is dehydrated.

Since processing, regardless of the method, changes the characteristics of the raw material, the optimal method of processing, as a general rule, is the one which changes those characteristics least. Both freezing and dehydration require high quality raw materials. Since a food product remains a dynamic system during storage after processing, packaging materials and storage conditions must have functional characteristics capable of minimizing the post-processing changes in the food. For frozen foods, protective packages and low temperatures are important; and for dehydrates, protective packaging and inert atmospheres within the packages are necessary. These have been developed by research in a number of disciplines, co-ordinated, integrated, and directed towards particular products and processes by the food scientist and technologist.

Dehydrated foods date back to sun-drying of meat and fruits in antiquity. Caesar recognized natural dehydration of grains as an important method of food preservation and planned his campaigns in accordance with harvest schedules. Later military leaders were responsible for other developments in food processing. Napoleon stimulated the invention of canning, and the Civil War hastened its early development.

## Wartime Progress

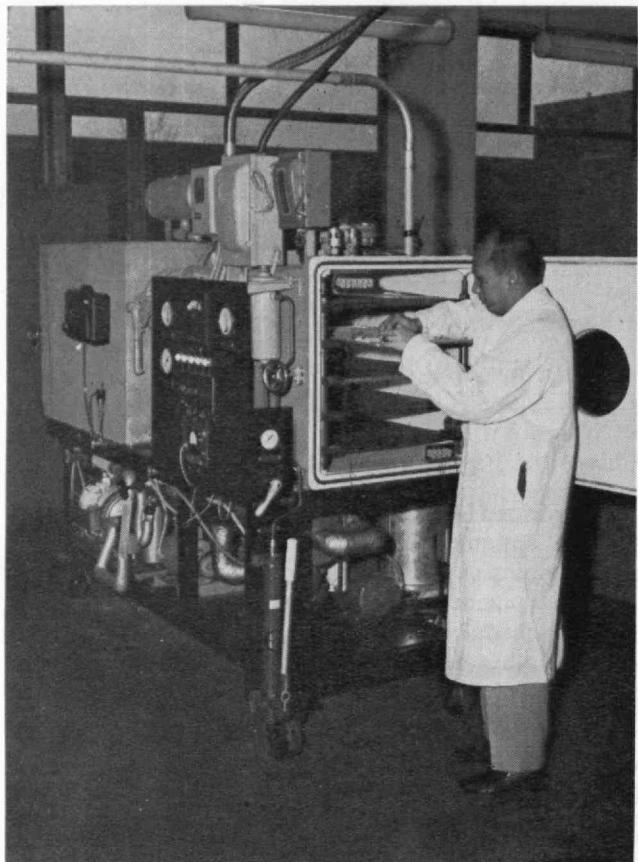
World War I provided impetus for development of air-dehydrated vegetables and meats. The poor and varying quality of the finished products, however, resulted in a moratorium in this industry until World War II, which created tremendous logistic problems and opportunities for dehydrates. Large-scale research efforts, co-ordinated by the late Bernard E. Proctor, '23, then head of Subsistence Research and Development in the Office of the Quartermaster General, resulted in marked improvements in the quality of the dehydrated foods, and the dehydrated soup industry emerged.

The rapid growth of this industry in Europe was no surprise inasmuch as refrigeration is still not too plentiful there, although household refrigerators now are becoming common. In the United States its growth was based on other reasons, since we have an abundance of household refrigerators. Here the demands of consumers for convenience, coupled with co-ordinated advertising campaigns, spurred its growth.

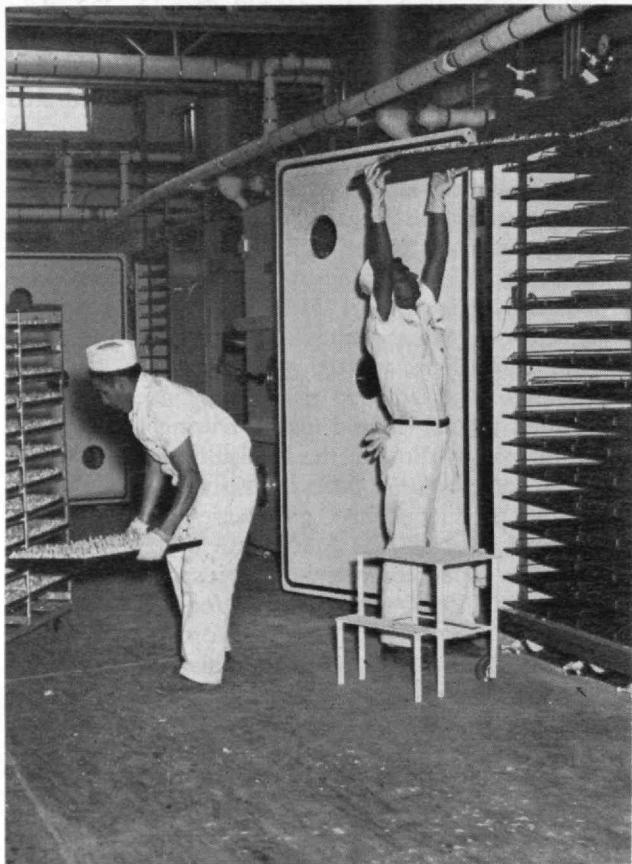
Conventional dried-soup mixes are made up largely of air-dried vegetables and meats. During dehydration, as hot air passes through the foodstuffs to remove the moisture, some volatile flavor constituents are also removed, the product shrinks, and "case-hardening" or a dried outer crust on the food particle sometimes develops. This latter characteristic is responsible for the poor rehydrability of some air-dried food products. Exposure of food to large volumes of forced air in many instances also results in products which are either already oxidized to some extent or easily oxidized subsequently.

## Processing Time Reduced

Early in the century, research studies on biologicals suggested a method of dehydration which involved relatively low losses of the quality characteristics. By a process known as lyophilization, or freeze-dehydration, water can be removed from a frozen material by trans-



**Ignacio S. Pablo, G, obtained parameters in freeze-drying with a modern pilot plant in an M.I.T. food laboratory.**



**Shrimp and meat products are being freeze-dried now in a United Fruit and Food Corp. plant in San Carlos, Texas.**

fer of the moisture from the frozen state to the gaseous state without the food (and included water) melting, and without much change in the size of the material. In the 1930's and 1940's this process was developed for expensive biologicals, blood plasma, and pharmaceuticals. Products such as vaccines, viruses, antitoxins, etc., of high quality have been treated this way on a commercial scale for many years.

One of the big obstacles to applying this technique to foods was the slow rate of dehydration, slow throughput, and subsequent high cost of water vapor removal. The value of finished pharmaceuticals or biologicals made this cost increment easier to justify than in the food industry. Experiments with freeze dehydration of foodstuffs, both in the U.S. and in Europe in the late 1940's and early 1950's showed tremendous potentialities for the application of this technique to foods if the cost could be reduced substantially. By these sublimation techniques, dehydrated food with little or no detectable loss in volatile flavor components, no shrinkage, and almost complete rehydrability could be produced. The food industry as well as the armed forces began to take notice.

Scientists in company laboratories and universities, too, became interested. A significant group was the Experimental Factory of the Ministry of Agriculture, Fisheries and Food at Aberdeen, Scotland, which used the vacuum contact-dehydration equipment developed by the A/S Atlas Company, of Copenhagen, Denmark. This group's work led to many technological innovations which markedly reduced the processing time and thus cut the cost to a point at which the process could be considered for large-scale handling of foods. Similar developments in freeze-drying technology took place in the U.S. Now freeze dehydration appears to be the most promising food preservation technique.

New and expensive food processing techniques become economically and commercially feasible if they become (1) competitive with existing methods; or (2) produce a desirable product not previously on the market.

Freeze dehydration falls into the latter category inasmuch as (1) a perishable food is turned into one that keeps at room temperature; (2) the product maintains its original shape and when water is added the product's color, flavor, and texture closely approximate that of the original foodstuff; (3) the chemical and physical reactions which occur during normal air dehydration do not take place at the low temperature (below 32 degrees F.) and under the vacuum (below 1.0 mm pressure) used in freeze dehydration; (4) damage to nutrients is also minimized by this method of processing; and (5) shipping costs are reduced appreciably.

#### The Outlook Now

As a result, the following commercial uses have been made of freeze-dried foods.

**Sell as such:** Freeze-dried shrimp, steaks, chicken, meat, lobsters, and crab offer the advantage of convenience (the preparation aspects having been moved from the kitchen back to the food factory), portion control for large-scale feeding, and ready availability of needed amounts of "perishable" foods in storage areas normally used for nonperishable items.

(Concluded on page 50)

# 60 M.I.T. Musicians

## Make a 5-Day Tour

*Alumni in Philadelphia, Buffalo and Rochester entertain band*

WHILE classmates recuperated from exams, 60 members of the M.I.T. Concert Band and their conductor, John D. Corley, Jr., toured Eastern cities by bus and truck to present their startling, robust, and often lyrical, symphonic music in concerts arranged by Alumni. Their programs on this five-day, mid-term tour featured contemporary music, including works by Andrew F. Kazdin, '57, a graduate student in Industrial Management, and Professor Gregory Tucker.



Wm. R. Huntington, '65, played one of the three tubas.

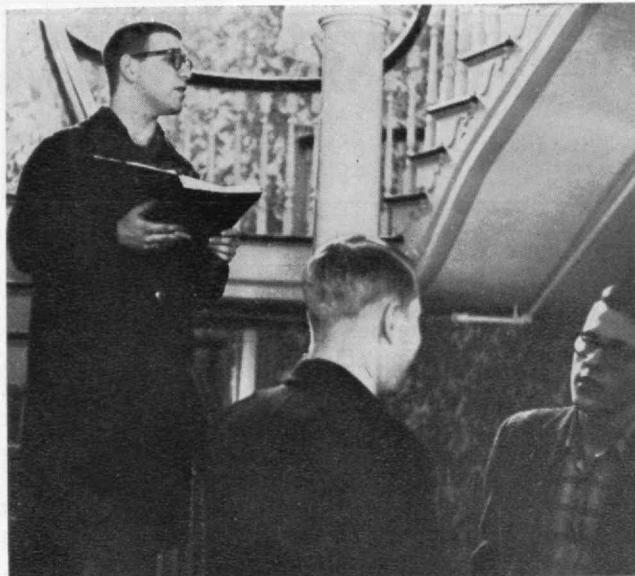
In Philadelphia, Wiley F. Corl, Jr., '39, arranged for the band to play to suburban high school audiences, and to be entertained afterwards in the homes of Alumni.

In Buffalo, Homer Fay, '53, and others saw to it that the band had a guided tour of the new Niagara project, and was entertained at the Niagara Falls Country Club.

In Rochester, Dr. Leo Cravitz, '44, Evan A. Edwards, '37, and others arranged for a concert at the University of Rochester's Cutler Union, which was followed by refreshments and an impromptu dance.

The band also played as part of the Colgate College music recital series in Hamilton, N. Y.

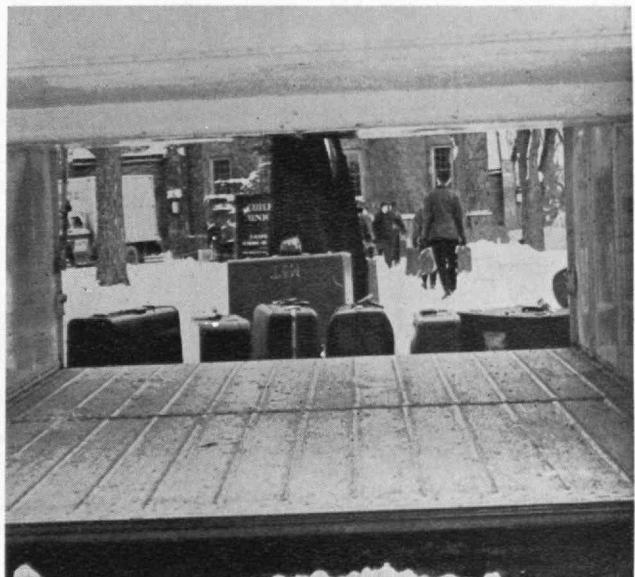
The weather was so cold that bus drivers rose early most mornings to warm up their engines, but with the help of Alumni all major troop movements were carried out successfully. One engineer-saxophonist consulted a map at every turn of the road and was always prepared to answer geographical questions, but much of the conversation both en route and during visits with Alumni dealt with the Institute.



Band President Joseph Goldfarb, '63, called the roll.



The percussionists (above) and part of the job (below).



# Institute Yesteryears

## 25 Years Ago . . .

BY AN AGREEMENT dated April 12, 1937, the Institute sold to the New England Mutual Life Insurance Company its last remaining educational property in Boston, the Rogers and Walker Buildings on Boylston Street with land covering the western two-thirds of the block bounded by Boylston, Clarendon, Newbury, and Berkeley Streets.

In 1916, at the time of removal to the new site in Cambridge, restrictions on this real estate precluded its immediate sale by the Institute; and, as a consequence, the School of Architecture remained temporarily in the Rogers Building and the Walker Building was rented to Boston University.

Since the sale agreement with the insurance company stipulated that the latter would take possession by June 30, 1938, the Institute proceeded without delay to construct an addition to its main group in Cambridge to provide quarters for the School of Architecture, and for other needs. This addition, Building 7, which gave for the first time an appropriate and fitting entrance from Massachusetts Avenue, was in due course named for the Institute's founder, William Barton Rogers.

¶ At the Faculty meeting of April 14, President Karl T. Compton announced the division of the Department of Mining Engineering and Metallurgy into two departments, effective with the academic year 1937-1938. Professor W. Spencer Hutchinson, '92, was to continue as Head of the new Department of Mining Engineering, which would include the Course in Petroleum Production. The new Department of Metallurgy was to be under the direction of Professor Robert S. Williams, '02, and would include the Course in Ceramics.

¶ Other administrative changes then made public included the creation of a new post of Dean of Humanities, to be filled by *Edwin S. Burdell*, '20, Associate Professor of Sociology; and the appointments of two new members of the Institute staff, *Nathaniel McL. Sage*, '13, as Head of the Placement Bureau; and *John T. Rule*, '21, as Assistant Professor of Drawing.

## 50 Years Ago . . .

AMONG THE FACULTY promotions approved by the Executive Committee of the Corporation were:

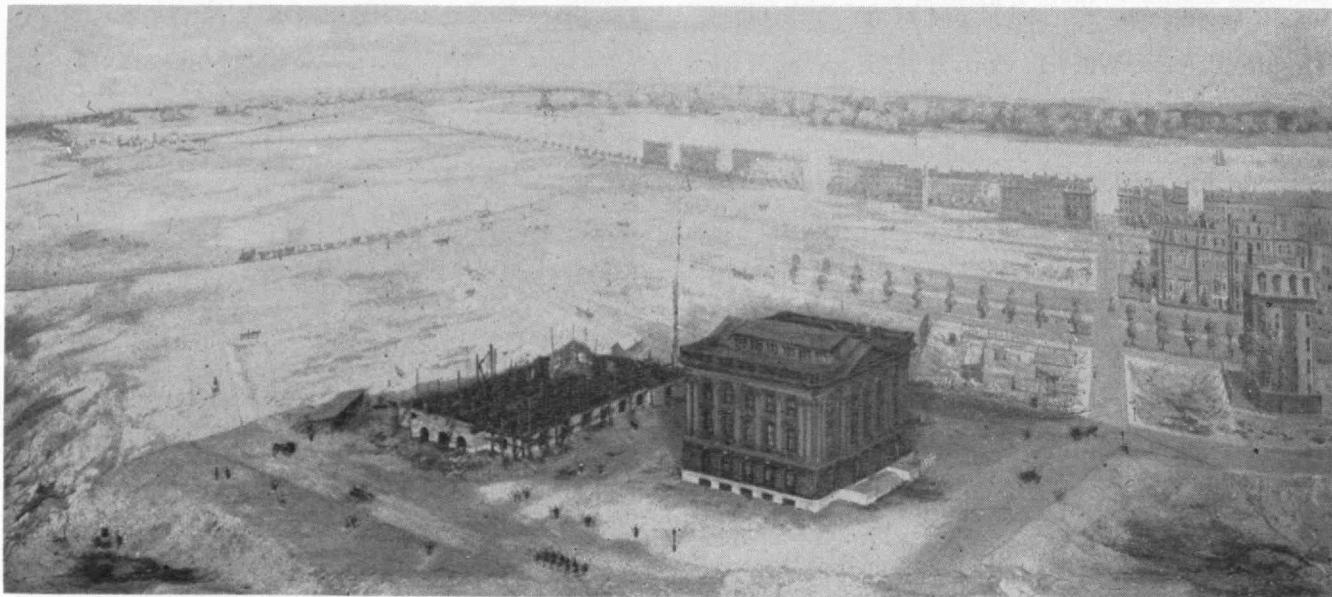
To Head of the Department of Chemical Engineering, *William H. Walker*. To Professor from Associate Professor: *F. Jewett Moore*, organic chemistry; *Charles E. Fuller*, '92, and *William A. Johnston*, '92, theoretical and applied mechanics; and *Charles F. Park*, '92, mechanism.

To Associate Professor from Assistant Professor: *Warren K. Lewis*, '05, chemical engineering; *Charles W. Berry*, '95, and *Joseph C. Riley*, '98, heat engineering; and *Harrison W. Hayward*, '96, theoretical and applied mechanics.

To Assistant Professor from instructor: *Robert P. Bigelow*, zoology and parasitology; *Henry K. Burrison*, '75, mechanical drawing and descriptive geometry; *Walter H. James*, '96, mechanical drawing; *Lawrence S. Smith*, '00, theoretical and applied mechanics; *Carle R. Hayward*, '04, mining engineering and metallurgy; *Herman R. Kurrelmeyer*, German; and *Newell C. Page*, '02, physics.

¶ "Work has been actively started," reported The Review, "on a new edition of the book 'Concerning the Massachusetts Institute of Technology,' which was originally conceived by undergraduates and is now being continued by the Institute Committee. Those who have not a copy of the previous edition, should not fail to send for one of the forthcoming volumes as the book is a complete symposium of everything connected with the Institute and undergraduate life here. . . .

"The first purpose of the book is to give a true picture of the Institute with the idea of encouraging young



The purchasers (25 years ago) of the site of the Institute's first real home now have a diorama depicting its construction.

# Activities Planned for Alumni Day, June 11

*Advances in engineering and science teaching will be featured at this year's M.I.T. gathering.*

FORENOON: Registration in the Rogers Lobby; special tours of new facilities for teaching, and a chance to see M.I.T. construction under way.

LUNCHEON: Your opportunity to hear President Stratton report on M.I.T.'s exciting current ventures, at the annual gathering in the Great Court.

*A blanket ticket for two for the whole day's events will be less than \$20 (it was \$25 last year).*

men in preparatory and high schools to come here. The second purpose is to acquaint entering students with the Institute, its traditions, customs and opportunities, giving them information in regard to its serious work as well as to its social activities. The book is given without charge to all entering students and is sent to correspondents who inquire for information in regard to the Institute."

¶ On the evening of Saturday, April 27, 1912, a gathering of 11 Alumni at the Salt Lake Commercial Club proceeded to found the "Intermountain Association of M.I.T.," now known as the M.I.T. Alumni Association of Utah.

## 75 Years Ago . . .

THE EDITOR of *The Tech* was "greatly pleased to see that [his] suggestion of last year regarding the formation of a banjo club, has been so favorably received. . .

"Our banjo club is to have several mandolins and a flute, besides banjos and guitars. The number of instruments will, of course, make their selections more difficult to play, but their success will bring to them greater honor on that account."

¶ The editor thought, however, that, "while the lack of rivalry and jealousy between the classes of the Institute has been a matter of favorable comment, it is by no means certain that such harmony is desirable or beneficial.

"If we should have class foot-ball and base-ball teams, it might bring to the front new and hitherto undeveloped material, and would thus furnish a larger set of men from which to choose the regular Tech teams. As matters now stand, the only thing of the kind is the struggle for the tug-of-war championship of the Institute between the class teams. This has always been highly interesting. . . .

"Our freshman class has always been kindly treated in the way of being allowed to carry canes and wear tall hats. Why not make them work for such honors? Let some kind of a yearly struggle between the sophomores and freshmen be instituted—as, for instance a foot-ball match. . . .

"There is a tradition that in '72 a bold freshman won the cane privilege for his class by thrashing a prominent sophomore; but that can hardly hold now. . . ."

AFTERNOON: Symposium in Kresge Auditorium on a new national problem, *Engineering and Science Teaching*, with demonstrations of interesting new educational concepts and techniques.

EVENING: The famous social hour on Briggs Field and dinner in Rockwell Cage with no speeches.

*A blanket ticket for two for the whole day's events will be less than \$20 (it was \$25 last year).*

## 100 Years Ago . . .

ON APRIL 8, 1862, at a meeting of the entire Institute as then constituted, the charter signed by Governor John A. Andrew on April 10, 1861, was formally accepted; a new organization was effected; by-laws were adopted; and officers were chosen to serve until the following May 6, which was appointed as the date for the first Annual Meeting.

The Charter Act had stipulated that a guaranty fund of \$100,000 should be raised within one year. Toward this goal some small contributions had been received, including the Institute's first bequest, \$3,000 from the estate of Miss Mary Townsend of Boston. Also, Ralph Huntington, a distinguished citizen of Boston, had written William Barton Rogers that by his will the Institute would receive \$50,000. But in April, 1862, the funds actually in hand fell far short of the stipulated \$100,000.

So, from the meeting of April 8, two resolutions resulted:

*Resolved*, That the members of the Institute are greatly cheered by the fact that, notwithstanding the engrossing claims of the public interests and the anxieties attendant upon the state of the country, they have received the assurance of a prospective fund of upwards of \$100,000 for the future use of the Institute.

*Resolved*, That the government of the Institute be directed forthwith to memorialize the Legislature to the effect that as this prospective contribution is not in a shape to comply literally with the condition of the Law of April 10, 1861, relating to the Institute, an additional year may be allowed them for complying in this respect with the conditions of the legislative grant."

The petition brought prompt action, for on April 25 the General Court passed an act extending for one year the time for raising the guaranty fund of \$100,000.\*

## 101 Years Ago . . .

ON APRIL 10, 1861, the legislative Act of Incorporation of the M.I.T. (Chap. 183, Acts and Resolves of 1861) was signed by Governor John A. Andrew.

\* "During a recess in the meeting of the Institute convened at eleven o'clock, A.M., this day (April 8, 1862) in the Rooms of the Board of Trade," there was held the 1st Meeting of the Institute's "Government," the title of which was changed to the "Corporation" in June, 1870.

# Books

**A WRITER'S GUIDE FOR ENGINEERS AND SCIENTISTS**, by Robert R. Rathbone, Associate Professor of English, and James B. Stone, Assistant Professor of English, M.I.T.; Prentice-Hall, Inc. (\$6.60). Reviewed by Francis E. Wylie, Director of Public Relations at M.I.T.

*The Gasoline Tank is Under the Seat—See that it is supplied with gasoline. Always strain through chamois skin to prevent water and other foreign matter getting into the carburetor. When filling the gasoline tank, extinguish all lamps; throw away your cigar . . .*

THESE INSTRUCTIONS are archaic but the diction is not. From a 1909 Ford Instruction Book, the passage serves as an example in this new guide to technical writing of how "instructions can be paced when they are presented informally, in a personal, face-to-face style." The Ford prose was frequently ungrammatical but it was effective, the M.I.T. professors observe.

Professors Rathbone and Stone do not defend bad grammar. Their chief concern is the promotion of clarity in research reports, scientific papers, and journal articles. They devote less attention to rules than they do to methods of effective communication, and they offer abundant samples, of which the Ford excerpt is one, which serve as useful models and some of which even have an intrinsic readability. Three exhibits, classics of their kind, were written by Jay W. Forrester, '45, of M.I.T., and there is a varied selection from Tech and other sources.

Organization, the introduction, pace, word choice, and style are among the subjects discussed. There are valuable lists of words and phrases to avoid. (Why say "the use of any sharp objects to facilitate the movement of this carton should be avoided" when you can say "USE NO HOOKS"? ) There is a whole chapter on reporting negative results. (Don't offer alibis and don't try to hide failure behind euphemisms.)

I was happy to find a defense of the sensible use of the pronoun "I" despite the widely accepted taboo with an example in which the late, distinguished Percy Bridgman began, without egotism and without apology, "In this article I shall . . ." just as Aristotle and many other great technical writers have done.

## For M.I.T. Men's Shelves

RECENT PUBLICATIONS likely to be of especial interest to Institute Alumni include:

*Design Guide to Orbital Flight*, by Jorgen Jensen, '49, George Townsend, Jyri Kork, and John D. Kraft of The Martin Company (McGraw-Hill, \$17.50).

*Handbook of Semiconductor Electronics*, edited by Lloyd P. Hunter, '39, of International Business Machines Corporation (McGraw-Hill, \$18.50).

*Management and the Computer of the Future*, edited by Martin Greenberger (The M.I.T. Press, \$6).

**RADAR OBSERVES THE WEATHER**, by Louis J. Battan; Doubleday (95 cents). Reviewed by Alan C. Bemis, '30, Research Associate in Meteorology.

THE meteorological applications of radar started during World War II at M.I.T.'s Radiation Laboratory and continued immediately after the war, when the Signal Corps sponsored M.I.T.'s Weather Radar Research Project. This pioneering work has now spread to research organizations throughout the world and has become an important branch of meteorology.

Louis Battan is certainly not the Rachel Carson of radar meteorology, but his book is an excellent elementary treatise on the subject. As one of the top scientists working in radar meteorology and cloud physics, Battan knows the entire subject intimately and has produced a well-arranged book which covers all aspects. For so short a discussion he has included a remarkable amount of information.

Occasionally I feel his brevity may mislead the reader, though not importantly. For example, on page 44 it would appear that evaporation rate was part of the definition of raindrops, whereas fall velocity is usually the quantity which distinguishes rain from fog or cloud. Some descriptions are not quite as clear as they might be. The PPI radarscope, the method of presentation of radar information most commonly used, is actually quite a simple concept. Battan's description misses its geometric simplicity. These faults are minor, merely the usual attempt of a reviewer to be critical. We recommend the book and consider it a worth-while addition to the Science Study Series.

## Science and the Nation

JAMES R. KILLIAN, JR., '26, Chairman of the M.I.T. Corporation, contributed the foreword to *Science and the Nation*, a new Prentice-Hall book by Assistant Professors J. Stefan Dupre and Sanford A. Lakoff of Harvard. The book deals with questions raised by the increased role of science in national affairs and discusses the new relationship between government, industries, and the universities.

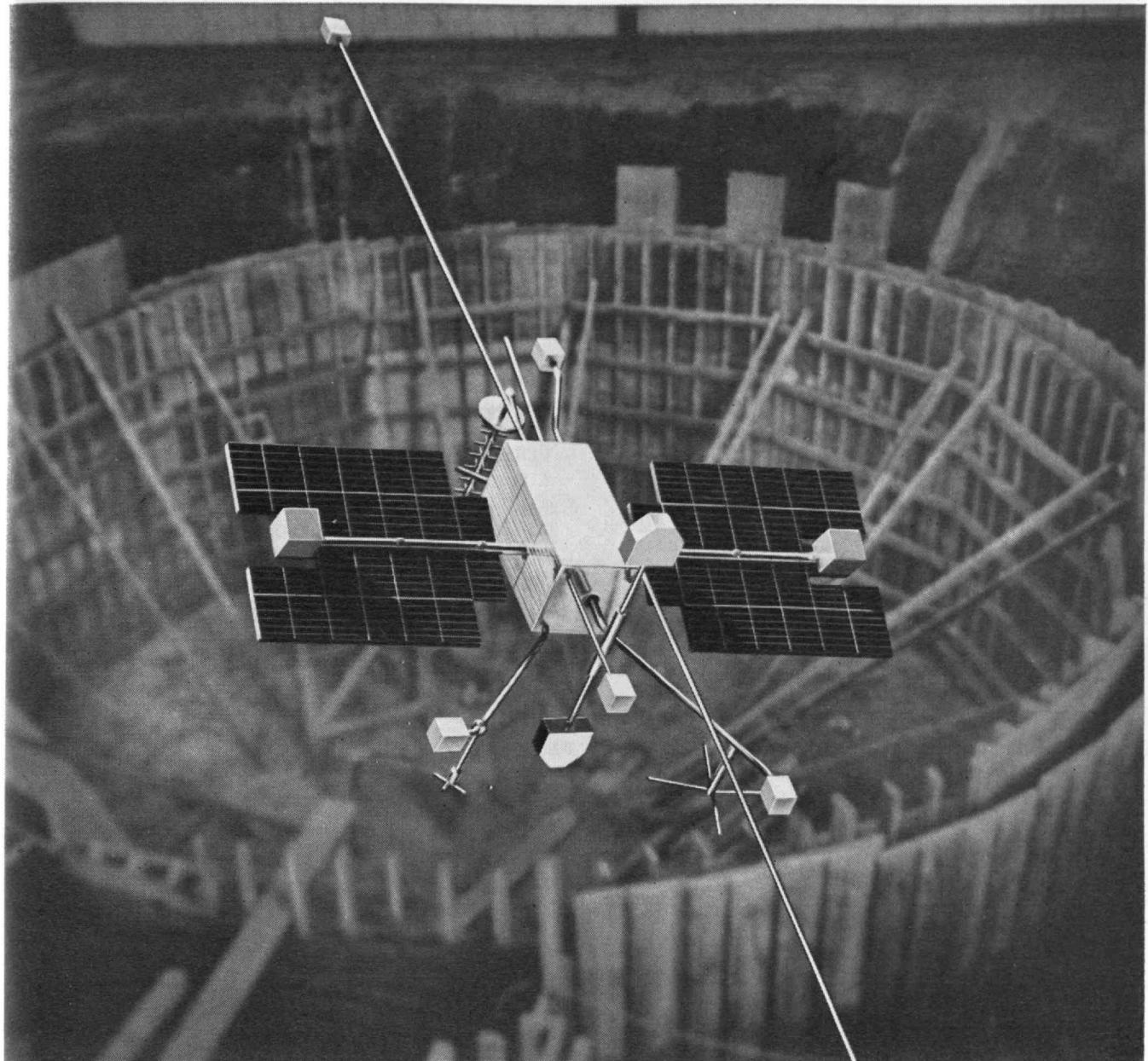
In its foreword, Dr. Killian calls for closer ties between scientific advisers and Congress, and urges that more scientists and engineers run for political office and serve as top policy advisers. He also stresses the need to bridge the gap between the physical and the political sciences.

## Briefings for the Press

TO HELP reporters explain scientific advances to the public, the National Science Foundation, the American Institute of Physics, and the National Association of Science Writers have arranged a series of seminars on fundamental aspects of newsworthy topics.

Radio astronomy was the subject of such a briefing in New York in January, and the chairman was Frederick T. Haddock, '41, Director of the Radio Astronomy Observatory at the University of Michigan. Other participants included George B. Field, '51, of Princeton.

Dr. Haddock called the writers' attention to the difference between radio and radar astronomy, and predicted that the latter would be confined during our lifetime to the study of the solar system. Dr. Field dealt with the mechanisms of the radio emissions and noted that, "If you pick a wave length, you pick a universe."



## Today OGO hovers above a crater on earth

Soon a new space chamber 30 feet in diameter will fill this deepening bowl of earth. Here OGO (NASA's Orbiting Geophysical Observatory) will be subjected to conditions of solar heating, vacuum, and vehicle radiation to the cold of outer space. The new space chamber will be the sixth at STL. It will enable engineers and scientists working on OGO, Vela Hotel and other STL projects to test large, complete spacecraft as well as major subsystems. And along with other advanced facilities at STL's Space Technology Center, it will provide unusual scope for engineers and scientists to verify

and apply new techniques in design, development and fabrication of spacecraft. STL's expanding space programs have created new opportunities for engineers and scientists in the following fields: Experimental Physics; Applied Mathematics; Space Communications; Antennas and Microwaves; Inertial Guidance; Analog Computers; Propulsion Systems; Space Physics; Digital Computers; Guidance & Navigation; Electro-mechanical Devices; Engineering Mechanics; and Applied Aerodynamics. Applicants should write College Relations at STL's address below. STL is an equal opportunity employer.



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# How to Make Help for Africa Effective

*Report warns of arms race and urges multilateral organization*

THE M.I.T. CENTER for International Studies is reporting its findings now in a three-year study of economic and political changes in sub-Saharan Africa. Arnold Rivkin, a lawyer and research associate, has directed this three-year study financed by a \$200,000 grant from the Carnegie Corporation. His book *Africa and the West, Elements of Free World Policy*, published in February was the first of several to be issued. The study has dealt primarily with ways in which Africa and the free world are affecting each other and how this relationship can be improved.

Mr. Rivkin's recommendations include:

- ¶ An international convention within the United Nations to guarantee the security of new African nations and forestall a disastrous arms race;
- ¶ More technical and economic assistance for Africa, and
- ¶ Establishment outside of the United Nations of a new multilateral organization to analyze, co-ordinate, and allocate African aid.

An arms race in Africa already is under way, Mr. Rivkin reports, and whether to grant military assistance to "the lengthening procession of new African states" will pose difficult questions. Africa is interlaced with disputes and potential rivalries that such aid could aggravate. Military build-ups become forces in internal politics and shift resources away from economic expansion. "Communist arms aid," he observes, "would be a more formidable threat to our national interest than the more widely advertised threat of Soviet trade and economic aid."

An international convention guaranteeing the African area against external aggression and externally supported subversion, he thinks, would largely remove the incentive for independent African states to maintain military forces for other than police purposes, minimize the risk of irredentist adventures, and improve "the whole climate for the development of viable economies and stable political institutions."

American policy-makers, he warns, must realize that Africans "are in a hurry for results and are often attracted by authoritarian models," and that while colonial powers are most immediately involved in African economic development, it is now properly the concern of the free world generally.

"The United States," he predicts, "will henceforth be increasingly concerned with African political and economic affairs and will play a greater part in shaping the West's outlook toward Africa." Part of this concern, he says, should take the form of more economic aid, increasingly co-ordinated with other free world assistance. In addition, he recommends that the United States encourage legitimate neutrality, support well-

conceived associations of independent states, and encourage, without insisting upon, democratic practices.

Israel, Mr. Rivkin thinks, may become an economic third force in Africa. Its pioneer spirit and visible achievements make it an attractive model. It is a state "with an advanced technology capable of extending assistance, providing technicians, entering into trade, and supplying investment capital without in any way compromising the sovereignty or independence of the African countries." Israel, he continues, presents no external threat to these newly independent countries, and an Israeli model would be more compatible with free world interests than a Communist model.

An effective economic development program, he says, should provide a strong incentive for sound economic growth and at the same time discourage land-grabbing and other brands of political adventurism. He proposes that such a development program be incorporated in a new, flexible, multilateral organization that could be built into the structure of the Organization for Economic Cooperation and Development. Such an organization, he argues, could make aid from former overseeing countries more palatable and increase the effectiveness of aid from both the United States and the rest of the free world.

Mr. Rivkin urges that African leaders take the initiative to bring such a program about. This, he says, would be a milestone in African development.

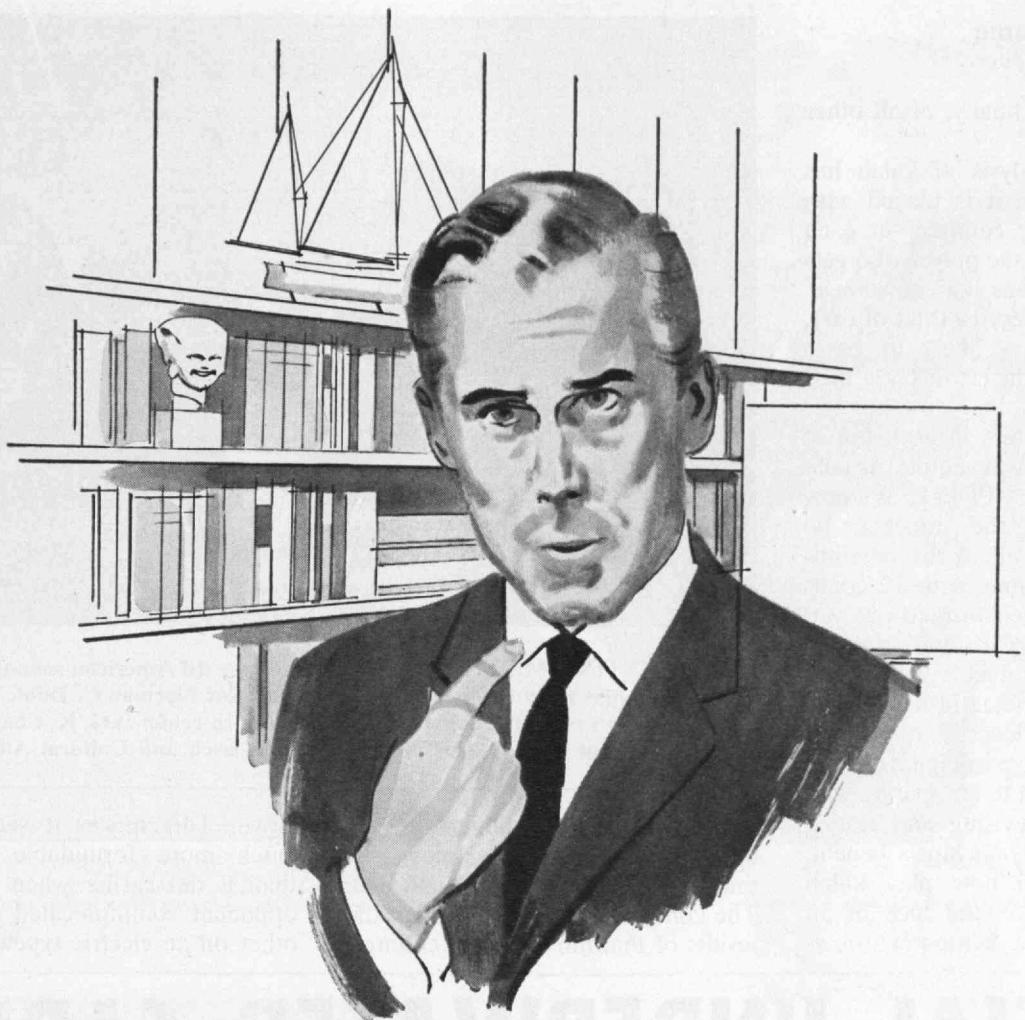
In a second book, *The African Presence in World Affairs*, Mr. Rivkin will analyze the principal problems of African economic and political development.

Other members of M.I.T. field teams investigating specific problems in new African states have included Dr. Robert L. West, now with the Rockefeller Foundation, and Herbert F. Weiss, who worked for two years in the Congo Republic; Professor Charles Nixon, now back at the University of California, who worked in Nigeria and the Federation of Rhodesia and Nyasaland, and Dr. Archibald C. Callaway, who worked in Nigeria.

A forthcoming book by Mr. Weiss will report on his studies of the development of Congolese political movements and review the mutiny of the Congolese army and Belgian post-independence policy.



Mr. Rivkin watching a doctor work with children in Kenya.



## "Who-Me?"

You have an estate plan, even if it is one by default...

*...for if you leave no Will, or one that is not valid, the law decides how your property is to be distributed. This is a plan, to be sure, but not necessarily a good one for you.*

Everybody should have a Will responsive to his needs, and it should be drawn by his lawyer.

Our experience as Executor and Trustee should be of value to you and your attorney in developing a flexible plan to cope with the ever changing needs of your family.

UNITED STATES TRUST COMPANY

OF NEW YORK

45 Wall Street

## Playing the Game

(Concluded from page 26)

of counters, and finally, of all other moves.

Computer analysis of kalah has shown that when it is played with only one or two counters in each bin at the outset, the player who gets the first turn has an advantage. With three counters (a total of 36), the game appears likely to be a draw if neither player makes a mistake.

With six counters in each bin at the outset—the way adults usually play kalah—the PDP-1 is now beating most of the students who challenge it, but all of the possibilities in such a game, with 72 counters, have not been worked out yet.

Professor McCarthy proposed last winter to conduct a kalah tournament for computer programmers. He now has called it off, because the prospective participants have found it more fun to co-operate with each other in devising and testing heuristics for the machine's benefit.

A person can now play kalah with the PDP-1 on the face of an oscilloscope. The computer shows

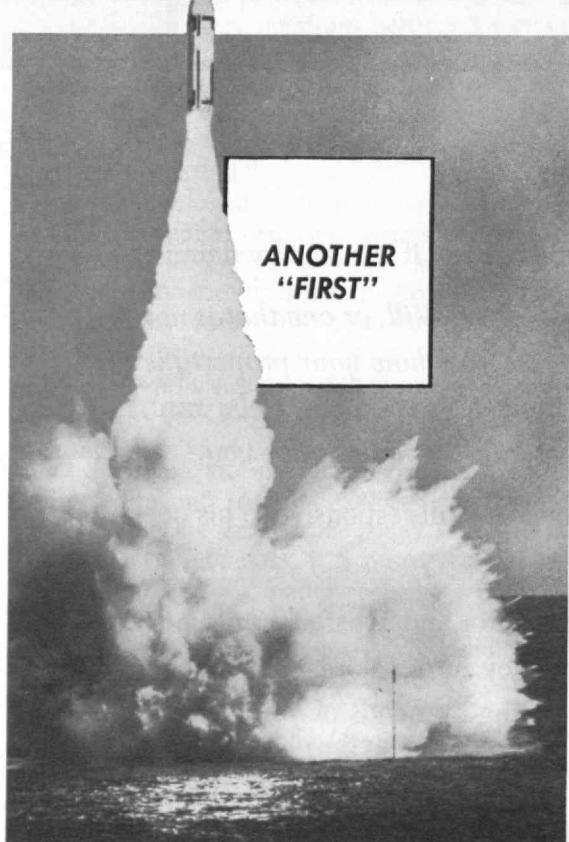


**REPRESENTING M.I.T. at Kanpur, India, where 10 American schools are helping set up a new institute of technology is Professor Norman C. Dahl, '52, shown above meeting Prime Minister Jawaharlal Nehru. In center is G. K. Chandiramani, representative of the Ministry of Scientific Research and Cultural Affairs.**

the arrangement of counters, and its opponent indicates his move by touching the scope with a light pen. The computer then flashes back the results of that move and its counter-

move. This makes it seem like a much more formidable opponent than it did earlier when it and its opponent communicated with each other on an electric typewriter.

# SPECIAL UNDERWATER CABLES



### **Watertight Coaxial Cables for Polaris**

**Now available!** Coaxial cables which maintain hydrostatic integrity at pressures 500 and 1,000 PSI. Recent applications met the specialized demands of the Polaris missile firing submarines. The antenna mast system required coaxials\* with the ability to withstand 500 PSI on the exposed end without leakage. In addition, they must remain watertight following subjection to an "S" bend at -54°C. BIW bonded polyethylene dielectric to the conductors and compound blocked the shielding braid. Care was taken to avoid altering the cable attenuation at prescribed frequencies. Rugged neoprene jackets were extruded by special techniques which controlled the O.D. and assured a tight fitting cable in the stuffing glands. Flexible armored versions are available.

\*RG-293/U and RG-294/U



### **Watertight Multiconductor Cables**

BIW is making "SW Type" multiconductor cables which will not leak under pressures of 500 and 1,000 PSI on the exposed end of the cable. Used for missile and control cables they are reliable beyond Navy tentative specifications. These are 1 SWA, 2 SWA, 3 SWA, 2 SWU and 3 U. All butyl insulated conductors with no leakage at 1,000 PSI are used for Polaris and other submarine applications. Typical of this type is a modified version of MWF-24.

We will be glad to send information and reports on the performance of all these cables.

**BOSTON INSULATED WIRE AND CABLE CO.**  
**BAY STREET BOSTON 25, MASS.**



## CAPITAL IDEA

**MARK C. WHEELER**, a Senior Vice President of the New England Merchants Bank, will view the buildings in this new office and research project with a real sense of satisfaction, since his financing ideas and prompt action were one of the vital elements in its execution.

**TECHNOLOGY SQUARE** is its name. It is being developed jointly by the Massachusetts Institute of Technology and Cabot, Cabot & Forbes Co. to transform a fourteen-acre Cambridge tract into a spacious and attractive complex of multi-story buildings. The bold and imaginative approach to financing presented by Mark Wheeler in the early stages of the project — before all the tenants were signed up — saved the developers serious delays in beginning construction.

**THE FIRST BUILDING**, almost completely leased, is on its way up in Technology Square . . . another example of what we're doing at New England Merchants to help build tomorrow's New England.

**NEW ENGLAND MERCHANTS NATIONAL BANK**

MEMBER F. D. I. C.

FOUNDED 1831

28 STATE STREET, BOSTON

## Individuals Noteworthy

(Continued from page 8)

### AEC Advisors' Chairman

THE General Advisory Committee of the Atomic Energy Commission has elected Manson Benedict, '32, Head of the Department of Nuclear Engineering at M.I.T., as its chairman. Dr. Benedict has been a member of the committee since 1958. He also has served on the AEC's Advisory Committee for Reactor Safeguards and was formerly chief of its Operations Analysis Office. Eger V. Murphree, '23, is currently one of the nine members of the committee that Dr. Benedict now heads.

### Naval Warfare Analyst

MANLEY ST. DENIS, '32, has joined the naval warfare analysis staff of the M.I.T. Operations Evaluation Group in Washington. Dr. St. Denis brings to this research experience as a naval architect at Pearl Harbor and the David Taylor Model Basin, and as a project leader for the Weapons Systems Evaluation Group of the Institute for Defense Analyses.

### In Seattle Next Year

CHARLES H. NORRIS, '31, Professor of Structural Engineering at M.I.T., will become head of the Department of Civil Engineering at the University of Washington in Seattle next June after a long association with M.I.T. Dr. Norris is senior vice-president of the Boston Society of Civil Engineers, has collaborated with others on textbooks in his field, and has served his Department as its executive officer.

### In Academic News

GORDON S. BROWN, '31, M.I.T. Dean of Engineering, and *Augustus B. Kinzel*, '21, have been named to the presidential committee to select recipients of the National Medal of Science. . . . *Ellis A. Johnson*, '28, has been appointed professor of management at Case Institute of Technology, and *John G. Truxal*, '47, Vice-president for Educational Development at the Polytechnic Institute of Brooklyn. . . . *Alexander Bavelas*, '48, has become a member of the Council for the Advancement of Science Writing, Inc.

(Concluded on page 42)



THE '62 TECH SHOW, "Tempest in a Teaport," dealt with Boston's history. Its stars included John W. Ryon, 3d, '62, and Wendy Wolfe of Jackson College. One reviewer in "The Tech" called it "surprisingly good," and another a "technical" failure.

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*Without Using Water!* with "WYR-LOK" BITS  
and CONDECO DRILLING MACHINES



## "WYR-LOK" REMOVABLE HEAD CARBIDE CORE BITS

DRILL  
FASTER!  
COST LESS!

You'll save up to 66% in original bit costs, more than 33% in replacement costs, and get more footage, too, with "WYR-LOK" carbide-tipped core bits. Tests prove them far more efficient than conventional diamond core bits — and YOU CAN DRILL DRY. Cutting heads are replaceable without removing bit from machine. Easy to sharpen on the job. Available in standard lengths. From 2" to 6" in diameter; larger diameters on request.

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President  
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## CONDECO PORTABLE DRILLING MACHINES ONE-MAN OPERATED! FOR WET OR DRY DUSTLESS CONCRETE DRILLING!

Condeco Drilling Machines are rugged, powerful units that will easily drill through any type masonry including reinforced concrete. Designed and Engineered for use with "WYR-LOK" Bits, they will save you time and money on every drilling job.

Available in several models for horizontal or vertical drilling of holes from 2" to 14" diameter. Drilling is done dry using vacuum or wet. Easily portable to the job — they are one man operated.



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PROVING GROUND

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SPRINGFIELD, MASSACHUSETTS  
ORGANIZED 1851



**LEONARD J. JINDRICH**

1961 Ordinary sales — \$1,017,750  
Joined our Montgomery, Alabama Agency in 1960 upon retirement from the U.S. Air Force as Lt. Colonel. A graduate of the University of Arizona, he was honored as the Company's 1st year Man of the Month in February, 1961. In 11 of the last 14 months he sold over \$60,000.



**MELVIN WEISZ**

1961 Ordinary sales — \$943,376  
A graduate of the University of Michigan, he joined our Detroit-Gold Agency in July, 1960 after 15 years as a teacher in the Detroit Public Schools. In 11 of the last 16 months he sold over \$50,000.



**JAN R. CHRISTENSEN**

1961 Ordinary sales — \$632,500  
A native of Utah, he attended the University of Utah and completed two years in the U.S. Army before he joined our Salt Lake City Agency in February, 1960. Youngest of these five men and single, he led the entire field force of the Company in September, 1960 with \$614,500.



**ROBERT J. CORNELIUS**

1961 Ordinary sales — \$870,433  
A native of New York state, he retired from the U.S. Navy as a Chief Petty Officer and joined our Honolulu Agency in September, 1960. In ten of the last fourteen months he sold over \$50,000.



**KYRAN MARTIN MURPHY**

1961 Ordinary sales — \$1,270,839  
A decorated Infantry Officer, he served fourteen years in the army following graduation from West Point. He joined our New York-Copeland Agency in April, 1960 and qualified for the Million Dollar Round Table that year. He placed 75th among all Massachusetts Mutual representatives in 1961 in new business delivered.

## MASSACHUSETTS MUTUAL *Life Insurance Company*

SPRINGFIELD, MASSACHUSETTS • ORGANIZED 1851

*Some of the Eastern Group alumni in Massachusetts Mutual service:*

### LAFAYETTE

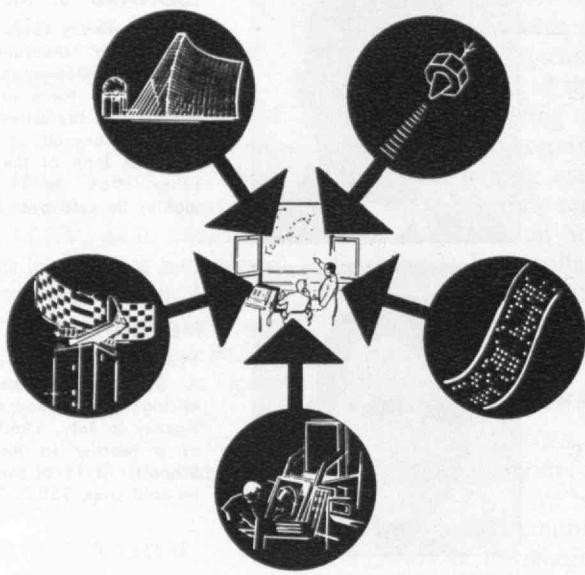
David B. Adler, C.L.U., '17, Orlando  
Frederic F. Lawall, '22, New York  
David K. Aldrich, C.L.U., '38,  
Allentown  
Frank W. Hiller, '43, Home Office  
Richard A. Faust, '56, Binghamton  
Aman M. Barber, Jr., '59, Allentown  
Cameron D. Warner, '61, Bethlehem

### LEHIGH

Russell E. Hoaster, C.L.U., '31,  
San Antonio  
Edward Billstein, Jr., '40, Atlanta  
R. Lester Dodson, Jr., '44, New York

### M. I. T.

Lyman L. Tremaine, C.L.U., '23,  
New York  
Harold Goodheim, '39, San Francisco  
Harold G. Ingraham, Jr., '49,  
Home Office



## how much do you know about MITRE?

Much of MITRE'S work is on the fringes of a new technology — and a great deal of it is highly classified. It is not surprising then that many young scientists and engineers have only a vague idea of what MITRE does.

MITRE's prime mission is to design, develop, and help put into operation global command and control systems that give our military commanders extra time for decision and action in case of enemy attack. Typical systems are SAGE, NORAD, MIDAS, BMEWS, and SPACE TRACK.

MITRE assists the Air Force in its systems management responsibility by engaging in systems planning and engineering, including feasibility studies, cost studies, operations research, testing and evaluation and preliminary system design.

At MITRE you would become identified with projects of the utmost national urgency — projects that offer a real challenge to the talented scientist.

The rewards are great. Salary and benefit plans are competitive. MITRE offers an excellent Educational Assistance program that gives every encouragement to employees who wish to continue their academic interests. (At the present time, MITRE employees are attending 15 nearby institutions, including M.I.T., Harvard, Northeastern University, and Boston University.) At MITRE you will live and work in pleasant suburban Boston.

Assignments are also being made at facilities in Colorado Springs, Colorado and Washington, D.C.

### Appointments are now being made in the following areas:

- Operations Research
- Communications
- Human Factors
- System Cost Analysis
- Econometrics
- Radar Systems and Techniques

- System Analysis
- Advanced System Design
- Computer Technology
- Mathematics
- Air Traffic Control System Development

- Antenna Design
- Microwave Components
- Space Systems Command and Control
- Space Surveillance
- Astrodynamics

Watch your college newspaper for dates when MITRE will interview on your campus, or, write in confidence to Vice President, Technical Operations, The MITRE Corporation, Post Office Box 208, Dept. MTR4, Bedford, Mass.

**THE  
MITRE  
CORPORATION**

Formed under the sponsorship of the Massachusetts Institute of Technology and now serving as Technical Advisor to the United States Air Force Electronic Systems Division.

*An Equal Opportunity Employer*

## Individuals Noteworthy (Concluded from page 40)

### Visiting Physicist

PROFESSOR O. R. FRISCH of the Cavendish Laboratory at the University of Cambridge in England, will be a visiting lecturer at M.I.T. April 2 to 6, under auspices of the American Association of Physics Teachers and the American Institute of Physics.

Professor Frisch was co-author with Dr. Lise Meitner of the 1939 paper in which the term "nuclear fission" was first used, and he was the first to observe the large energy liberated in the fission of a single uranium nucleus. He is the author of *Meet the Atoms* (1947) and numerous articles and broadcasts, some of which have been collected in *Atomic Physics Today* (1960).

He worked on the atomic bomb both at Liverpool and Los Alamos and was head of the Nuclear Physics Division of the Atomic Energy Research Establishment at Harwell in the 1940's.

Professor William W. Buechner, '35, is in charge of arrangements for his visit to M.I.T. under a program supported by the National Science Foundation.

### To Study Libraries

J. C. R. LICKLIDER, who was associated with Lincoln Laboratory for several years, will direct a study of library methods contracted for by the Council on Library Resources, Inc., with Bolt, Beranek and Newman, Inc., of Cambridge. Professor Philip M. Morse of M.I.T. and Gilbert W. King, '33, of IBM are members of the Advisory Committee.

The functions of library systems, techniques which may support their operations, and problems in man-machine communication and artificial intelligence are among the topics to be considered.

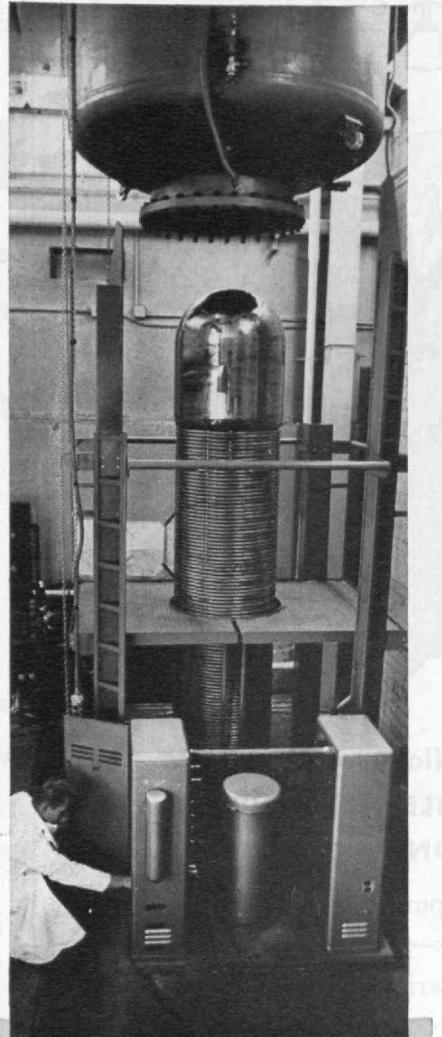
### Helping Reporters

FIVE M.I.T. Alumni are on the list of eminent scientists who have agreed to help the National Association of Science Writers increase the accuracy of science reporting in the press. They are *Lamar Field*, '44, Vanderbilt University; *Allan T. Gwathmey*, '28, University of Virginia; *Thomas F. Malone*, '46, Travelers Insurance Co.; *Harry Wexler*, '39, U.S. Weather Bureau, and *Sanborn C. Brown*, '44, M.I.T.

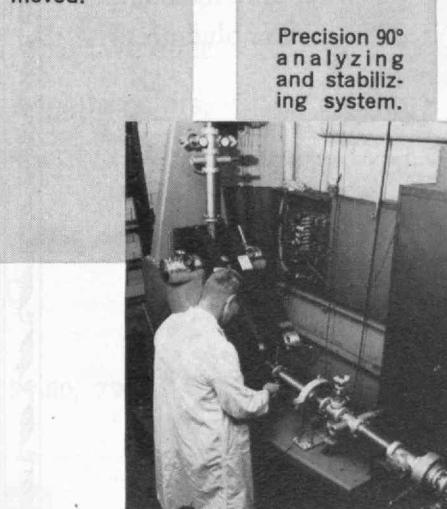
# A Versatile New **Van de Graaff®**

A new Van de Graaff accelerator has appeared on the scene. It did not spring full-blown from the brow of an inspired design engineer and, in fact, bears a remarkable resemblance to its predecessors. It evolved rather from both an inspired customer's need and improved state of the art. The KN-4000, at 4 Mev, does fill in a gap in the voltage range of standard equipment. It offers great versatility of use, low installation cost, and delivers a very respectable  $400 \mu\text{A}$  of current at rated voltage. A convertible machine, it will also accelerate a full milliampere of electrons (4 kilowatts).

In addition to offering "beam purity" and precision, with adequate energy for a fundamental research program, its output is high enough to permit a variety of analytical and engineering uses. Neutron production would be  $2 \times 10^{12}$  n/sec. from the prolific  $\text{Be}^9(\text{d},\text{n})\text{B}^{10}$  reaction. Nanosecond pulsing is available. By "beam purity" we mean that accelerated particles are monoergic to within 100 electron volts. Electronically regulated beam stability is better than one part in several thousand. Beam divergence times beam diameter is less than  $3 \times 10^{-3}$  radian-cm, and 1 or 2 mm spot sizes are attainable 20 feet from the accelerator. Voltage is continuously variable over a wide range.



Terminal and accelerating section of the KN-4000 Van de Graaff with pressure tank removed.



**HIGH VOLTAGE ENGINEERING**

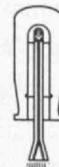
BURLINGTON, MASSACHUSETTS, U. S. A.

**APPLIED RADIATION CORPORATION**  
**HIGH VOLTAGE ENGINEERING (EUROPA) N. V.**

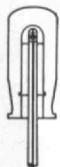
Short-lived radioisotope production and neutron activation, radiation effects and solid state work, radiobiology, energy level determinations, and (with conversion) massive-dose studies, catalysis and polymerization are a few of the possible areas of use. An English producer of medical supplies will use the 4 kw electron output for sterilizing his product in bulk quantities. A U.S. university will use KN-4000 as a central tool in neutron physics.

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\$60

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OUR REMARKABLE NEW SUIT OF  
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Here is the latest development in the field of men's Spring and Summer suits—a featherweight 7-ounce blend that combines the wrinkle-resistant and long-wearing qualities of Dacron® polyester with the soft hand and smartly tailored appearance of worsted. And—most surprising of all—this good-looking town wear suit is also washable. In navy, medium grey or blue-olive; also blue-grey, and medium grey or brown hairlines; medium grey or blue-grey Glen plaids. Coat and trousers.

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## Feedback

(Concluded from page 3)

It's we design  
Each building's line  
Plan every mine  
And sockets,  
God, it may be  
Who makes a tree  
But only we  
Make Rockets.

Now Science gains  
The superbrains  
And quickly drains the top,  
We get it seems  
Those modest dreams  
Below the Cream  
Of the Crop.

We'll beat this slander  
Let's not meander  
Our propaganda  
We'll hammer,  
Why should we rest  
With second best  
When we are blest  
With glamor?

78 West 11th Street,  
New York 11, N. Y.

### Two Votes for the Old Cars

FROM CHARLES G. ABBOT, '94:

I have read the article, "The Bill for Changing Cars," on page 41 of your February issue. You might have added that if the continuation of the models of 1949 had been followed, the lives of over 10,000 people would have been extended, and the cost of hospitalization of several million would have been saved.

I drive a 1941 Pontiac and my wife drives a 1951 Plymouth. Both cars look about as well as ever and drive about as well as ever, and repairs in these 20 plus 10 years have cost us less than the cost of one of the new monsters.

Smithsonian Institution  
Washington 25, D.C.

### Regarding Reprints

FROM CHARLOTTE WINNEMORE, '30:  
Is there any way that the article, "The Inhuman Style" can be brought to the attention of a much larger public? Do you have reprints?

1367 Glenn Avenue  
Columbus, Ohio

The Review seldom can supply reprints of its articles but frequently grants permission to others to have them made and distribute them. Subscriptions to The Review are welcomed, at \$4 a year in the United States, and \$4.50 a year elsewhere.—Ed.

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COOL  
COMFORTABLE ....

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The most desirable fabric blend in light-weight suits is 55% Dacron and 45% pure worsted . . . and for several reasons. Probably the most important is the fine resistance against wrinkling. Suits of this blend seldom need pressing. Then too, this combination provides the lightest, coolest fabric for even the hottest summer wear. We offer a fine choice of smart tones in plain colors, stripes and glen plaids . . . expertly tailored by Freedberg of Boston.

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## Communications Theory

Execute logical design and performance analysis of digital data communications systems, evolve practical implementations of coding techniques. Work closely with computer programmers on system simulation. Experience in digital design or background in coding theory desired.

## Programming

Senior responsibility exploring topics in communications research, pattern recognition, information retrieval; working with a variety of computers. Bachelor's Degree in Mathematics and preferably some familiarity with physical sciences.

## Pattern Recognition

Conduct theoretical studies in the statistical aspects of pattern recognition, working in close liaison with computer experts. Requires M.S. in Mathematical Statistics or Applied Mathematics, Ph.D. preferred; experienced in theoretical aspects of computers and numerical analysis.

## Control Systems Design Theory

Perform research in the modern theory of optimum control and its applications. Investigate various methods of implementing optimum and sub-optimum control algorithms by digital and analog computers. Requires good background in differential equations and analysis, appreciation of control problems, understanding of digital and analog computers, familiarity with current applicable literature.

For information, write or call direct to the following as applicable:

Dr. Steven Sussman, Head, Communications Theory Laboratory  
Mr. Joseph Van Horn, Head, Computer Laboratory  
Dr. Taffee Tanimoto, Head, Pattern Recognition Laboratory  
Dr. Bernard Friedland, Control Systems Design Theory

Correspondence and phone inquiries will be held in strictest confidence.

## APPLIED SCIENCE DIVISION



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An equal-opportunity employer.

## Why and How Water Is Treated

(Concluded from page 28)

for media, the particle size of the filtering media is fairly large and so is the pore size between the grains. Therefore, we cannot count on mechanical straining being a primary method of removal of the fine turbidity and the small cysts. If we cannot have straining, what is the mechanism of removal? There are two mechanisms that are found to be important in this picture, one is sedimentation and the other is impingement. Picture a spherical sand grain with water flowing down over it. As the water reached the top it would tend to flow around the sand grain. As the water streamlines tend to part at the top of the sand grain, there is an area of low velocity right in the middle, and a very tiny little settling basin is created just at the top of each sand grain. Therefore sedimentation occurs at the top of the grains. This is the sedimentation aspect.

The impingement aspect is as follows: If water is made to go through a turn, anything that is heavier than the water will tend to be thrown to the outside side of the turn, due to momentum. As water flows down through a sand bed, there are many turns of the water. At each turn, the heavier particles will tend to be thrown to the outside of the turn and will impinge themselves on the sand grains, where they will tend to stick and be removed. In diatomite filtration, on the other hand, the pore openings are much smaller and mechanical straining is a primary mechanism of solids removal.

In the granular filter there are three main parts: 1) the filtering medium which is about two-and-a-half-feet deep, 2) quite generally, gravel, and 3) an underdrain system.

In the diatomite filter the filtering medium is the diatomite and the gravel and underdrain is replaced by a septum that holds the diatomite. The gravel of the granular filter is used to keep the sand out of the underdrain system and the underdrain system is used to collect the filtered water and carry it away.

In both of these types of filters when the pore openings become clogged due to the removal of solids during filtration, the head loss through the filter increases with time, and after a time becomes large enough so that the filter has to be cleaned. In a granular filter this is done by reversing the flow of the water and pumping water through the underdrain system, up through the gravel and sand. This is the critical hydraulic design problem for a filter because the flows are so much higher during the backwashing. Water is pumped into the underdrain system where it is distributed evenly throughout the bottom of the filter box. The gravel aids in this process of distributing the water so there is a uniform rise of water up through the sand, which tends to cleanse the sand. This takes a large amount of filtered water so one would prefer to do this infrequently or too much of the filtered water would be used for washing. The diatomite filter is also cleaned by reversing the flow which takes diatomite off the septum.

The last unit process is disinfection. This is quite commonly done with chlorine and currently the best explanation of the mechanism of disinfection by chlorine is that it is able to react with one of the key enzymes in the metabolism pattern of bacteria.

## *Our Spring List:*

**March** HIGH MAGNETIC FIELDS  
edited by Kolm, Lax, Bitter, and Mills  
752 pages \$15.00

STRATEGY AND STRUCTURE: Chapters  
in the History of the Industrial Enterprise  
by Alfred D. Chandler Jr.

463 pages \$10.00

MANAGEMENT AND THE COMPUTER  
OF THE FUTURE

M. Greenberger, editor 368 pages \$ 6.00

**April** MACROMOLECULAR SPECIFICITY AND  
BIOLOGICAL MEMORY

edited by F. O. Schmitt 120 pages In press.

PETROLEUM PROGRESS AND PROFITS:  
A History of Process Innovation

by John L. Enos 352 pages \$ 9.50

SITE PLANNING  
by Kevin Lynch 320 pages, illus. \$ 8.50

**May** BIOLOGICAL ORDER  
by Andre Lwoff 128 pages \$ 4.50

THE UNIVERSE  
by Otto Struve 192 pages, illus. \$ 4.50

*Order from*

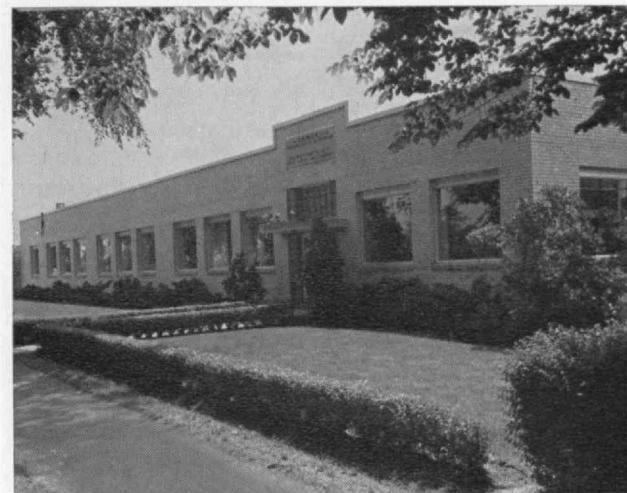
THE M.I.T. PRESS

18 Vassar Street Cambridge 39, Massachusetts

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Available Fall 1962

1360 Soldier's Field Road  
Boston, Mass.



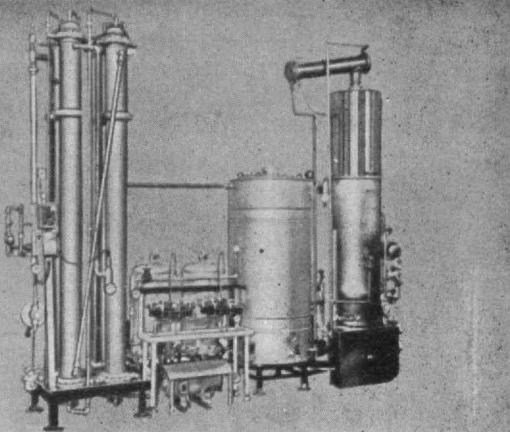
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A. White, '26  
T. Hartwell, '28  
N. A. Everett, '48  
V. C. Smith, '48  
S. Beran, '58

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S/A-22-1/4

## Trend of Affairs

(Concluded from page 18)

### Amplifiers and Computers

WILLIAM SHOCKLEY, '36, in the sixth lecture of Lincoln Laboratory's series this winter, suggested that transistors as amplifiers are a key innovation in the development of man's control over his environment. When thought of broadly as devices to convert and regulate energy, amplifiers are in the same category as fire, beasts of burden, and sails, he explained.

The transistor is a factor in reducing the size and cost of computers, he continued. When electric motors were reduced in size they came into wider use, and the role of computers may be enlarged similarly, he said.

Dr. Shockley developed the first transistor in 1948, completed his work on the junction transistor in 1952, and was a co-winner of the 1956 Nobel Prize for Physics. He is now director of Shockley Transistor, Unit of Clevite Transistor, in Palo Alto, Calif.

### World Trade and Graduate Education

THE M.I.T. Alumni Council, at its January meeting, heard Professor Charles P. Kindleberger discuss the European common market and world trade, and Professor John T. Norton, '18, describe changing trends in graduate education.

Professor Kindleberger noted that the vitality and readiness to experiment of other nations' industries has been a factor in reducing the technological gap between them and American industry, and suggested a gradual opening of American markets in selected areas to more foreign competition. The world is shrinking so fast, he said, that we must turn on more gas.

Professor Norton, who was acting dean of the Graduate School in Dean Hazen's absence, called attention to the increasing importance of fundamental knowledge in graduate school programs, and stressed the value of the new interdisciplinary centers now being established at the Institute as means of bringing new points of view to the graduate students.

President D. Reid Weedon, '41, presided and 185 members and guests of the Council attended.

### To Encourage Engineering Teaching

M.I.T. was one of 10 recipients of \$100,000 grants announced recently as part of an \$8,000,000 effort by the Ford Foundation to combat the growing shortage of qualified engineering teachers. The grants are to be used for forgivable loans and other aid to doctoral engineering students preparing to teach.

Qualified students who commit themselves to teaching careers will be eligible for loans up to \$10,000. Their debts will be forgiven after their graduate study is completed at a fixed rate each year that they serve on an American or Canadian engineering faculty.

### More Degrees Granted

LAST JANUARY 30, M.I.T. awarded 223 undergraduate and advanced degrees to students from 32 states and 29 foreign countries. Last September, 300 students from 40 states and 34 foreign countries received degrees. As usual, there were no commencement exercises.

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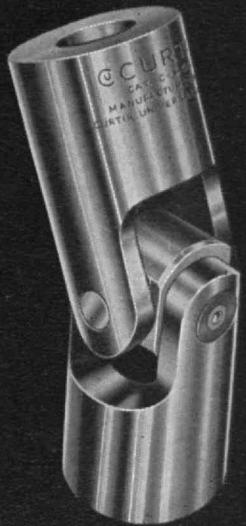
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## Another Revolution in Foods

(Concluded from page 30)

**Components of Soup Mixes:** Several large European and American dried-soup manufacturers have found that a relatively small amount of a freeze-dried component can add zest and flavor to dehydrated soup mixes. This makes it possible to produce an excellently flavored soup with but little added cost for ingredients.

**Dehydrated Meals:** Completely dehydrated meals of high quality for the mobile military forces, campers, and possibly space explorers, are now available.

A "guesstimate" of the volume of business in this field now is \$10 million a year. It appears probable that this total will increase and by 1970 sales in the U.S. may approach \$2 billion. In Europe, because of less availability of refrigeration, the market may be even greater.

Americans today spend an estimated 500 million dollars per year for soups, of which 6 per cent are in the form of dried-soup mixes. This percentage will increase in the next decade, as will the number of freeze-drying companies. The restaurant trade, serving 25 billion meals yearly, offers an excellent outlet. The dry cake and pie mixes, dessert and pudding mixes—these and many more items offer potentialities for freeze-drying.

Freeze dehydration will complement and supplement rather than supplant other techniques. Freezing did not end canning. As costs of this new technique are reduced, more and more uses for it will be found. As the population increases, as our standard of living rises, and as the demand for convenience and quality grows, there will be markets for more foods of all types.

(Professor Goldblith discussed radiation's use to preserve food in *The Review's* February, 1962, issue.)

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# Club News

## Taiwan Club Tours Scientific Centers

At the invitation of Jen C. Huang, '29, General Manager of the Cyanamid Taiwan Corporation, the M.I.T. Club of Taiwan was conducted on an inspection trip to Hsinchu on Saturday, January 27, one week before the lunar New Year. In fine sunny weather, 11 members and their families made the 70-kilometer journey from Taipei by motorcar. After briefing the party on the organization of the company and its joint operation by the Chinese and the Americans, Mr. Huang described the manufacturing processes used to make antibiotics, particularly aureomycin. The products are marketed locally under the "Lederle" label. Through double-sealed windows (because of strict temperature, humidity and sterility controls) members saw fermentation of corn starch in four stainless steel tanks each capable of producing 35 kilograms of product.

At Hsinchu, the party also inspected the two best research facilities in Taiwan: 1) Tsing Hua University's 10 KW nuclear reactor of the General Electric swimming pool type, where a scientist trained at the Argonne National Laboratory was at hand to explain the reactor features and isotope research and, 2) Chiao Tung University's Research Institute of Electronics, where colored television and microwave transmission and reception were explained and demonstrated.

Following the inspections, the members reassembled at the Cyanamid guest house where Club President Mann C. Chan, '26, reported on some club business items, urged members to contribute to the Alumni Fund and expressed thanks to our host, Mr. Huang, who entertained us with a Chinese dinner.—Yu-Chi Chang, '58, Secretary, 34 Roosevelt Road, Sec. I., Taipei, Taiwan.

## Dean Brown to Speak At Worcester Meeting

The final in a series of seminars held by the M.I.T. Club of Central Massachusetts met January 31 in the Stockholm Restaurant at the Worcester Airport. Speaker for the evening was Professor Moise Goldstein, '51 (Course VI), who spoke on "The Technology of Hearing." The topic attracted several of the members' wives and prompted many questions.

The five meetings in this series each attracted from 15 to 20 club members. The topics were diverse. Starting on November 8, Professor Peter Demos of the Laboratory of Nuclear Science discussed "Cosmic Rays" (this lecture had a prerequisite of two books from the Science Study Series). The series continued with Professor Vernon Ingram and "Virus Research" on November 28, and Jan Hahn on Decem-

## Sloan Executive Development Convocation at M.I.T. Will Consider Decisions Needed in Changing World

The M.I.T. School of Industrial Management has arranged a 1962 Executive Development Convocation of members of the Sloan Fellowship Program and the Program for Senior Executives. It will be held at the Institute May 3, 4, and 5, and the central theme will be "Management Decisions in a Changing World."

Alfred P. Sloan, Jr., '95, Honorary Chairman of the Board of Directors of the General Motors Corporation, and James R. Killian, Jr., '26, Chairman of the M.I.T. Corporation, will speak at a dinner on Friday evening in the Somerset Hotel, at which Dean Howard W. Johnson of the school will preside.

Other speakers will include President Julius A. Stratton, '23, Dean George R. Harrison, Dean Emeritus E. P. Brooks, '17, Director Max F. Millikan of the Cen-

ter for International Studies and President William B. Murphy of the Campbell Soup Company.

Professors on the program will include Douglass V. Brown, Jay W. Forrester, '45, Ralph E. Freeman, Billy E. Goetz, Houlder Hudgins, Charles P. Kindleberger, Donald G. Marquis, Elting E. Morison, Bernard J. Muller-Thym, Paul Pigors, Carroll L. Wilson, '32, Robert M. Solow, and Douglas M. McGregor.

Talks also will be given by Associate Professors Edgar H. Schein, Edward H. Bowman, '46, Ross M. Cunningham, Myron J. Gordon, Daniel M. Holland, Stanley M. Jacks, William L. Letwin, Leo B. Moore, '37, Gerald B. Tallman, Zeon S. Zannetos, '55, and Assistant Professor William F. Pounds. Peter P. Gil is handling convocation correspondence.

ber 13 discussing "Oceanography and Undersea Research." (The latter meeting had another Science Study Series prerequisite.) The new year started with Professor Egon Orowan (Course II) leading a discussion on "Materials Research" on January 10. Arranged through the vigorous efforts of Fred Lehmann, '51, and held in the home of Haskell Gordon, '38, the seminar series dealt largely with methods used rather than with specific facts disclosed by researches. This type of meeting was acknowledged by all as a worthwhile and intellectually stimulating experience. Our spring meeting on April 12 will feature Dean Gordon Brown, '31, speaking on "Ganglia," a provocative subject.—Thomas H. Farquhar, '60, Secretary, 692 Main Street, Shrewsbury, Mass.

## Detroit Alumni Hear City Planning Chief

The McGregor Community Conference Center at Wayne State University was the scene of the January 25 meeting of the M.I.T. Club of Detroit. Charles A. Blessing, '37, Director of the Detroit Planning Commission, reviewed Detroit's urban renewal program and commented on the role of research in strengthening the economic base of Detroit. During the last decade, he said, Detroit has invested more than \$800 million in public improvements including expressways, urban renewal projects and the civic and cultural centers. Noting that M.I.T. Alumni are naturally proud of their school and think of it as tops in research facilities, he urged them to work for development of research facilities where they live and work—in this case Detroit.

Some of those at the meeting were, Fred Beutler, '49, Wade R. Brown, '54, Jerry J. Costello, '34, John C. Erickson, '55, Thomas J. Lough, '13, Doug Martin, '25, Paul H. Richardson, '30, Frank G. Rising, '59, R. Gordon Spear, '26, Beri Tashjian, '33, and Charles L. Tuller, '12. —Ella Paton Gardner (Mrs. Richard Gardner), '55, Review Secretary, 1821 Villa, Birmingham, Mich.

## Mrs. Compton Speaks to Women's Association

Having started off the season by wholeheartedly joining in the October 19, 1961, National Alumni Night, the M.I.T.W.A. has enjoyed a most interesting series of programs. On December 3, 1961, 27 members and their guests heard J. J. C. McCue's talk on bats at a dinner meeting at the Faculty Club. On February 3, 1962, a luncheon meeting to which foreign students were invited was held in the Emma Rodgers Room. Mrs. Karl T. Compton talked on her last trip through Greece, Lebanon and Jordan to Israel, where she attended Technion's cornerstone laying ceremony for the Karl Taylor Compton Building.

M.I.T.W.A. members present were, Marjorie Pierce, '22, Julia C. Sullivan, '42, Dorothea Rathbone, '20, Mildred L. Coombs, '20, Phyllis Grosswendt, '42, Alice M. MacCready, '42, Charlotte Sage, '13, Mary F. Williams, '59, Louise Horwood, '19, Dorothy W. Weeks, '23, Marion Bates, Madeline I. Anderson, '31, Gladys P. Lyons, '45, Theodore Keith, '32, Eva A. Disharoon, '35, Frieda O. Cohen, '45, Mary E. Elder, '43, Alice H. Kimball, '36, Janet Perkins, '52, Ruth Dean, '29, Dr. Sonja K. Gross, '50, Marjorie Swift, '41, Margaret Freeman, '34, Mary Guinan, '24, Margaret T. Coleman, '50, Norma Koch, '33, and Frances E. Wypler, '39. Mrs. Compton and Mrs. Charles H. Townes were guests of the Association.—Shushan M. Teager, '54, Recording Secretary, 21 Middlesex Road, Watertown 72, Mass.

## Phoenix Club Sets Monthly Luncheons

Phoenix Alumni are meeting at luncheon on the second Wednesday of each month at the Arizona Ranch House Inn, 5600 N. Central Avenue. Visiting M.I.T. Alumni and their guests are invited. Reservations are not needed.—D. F. Cayce, '33, Secretary, 5602 E. Mockingbird Lane, Scottsdale, Ariz.



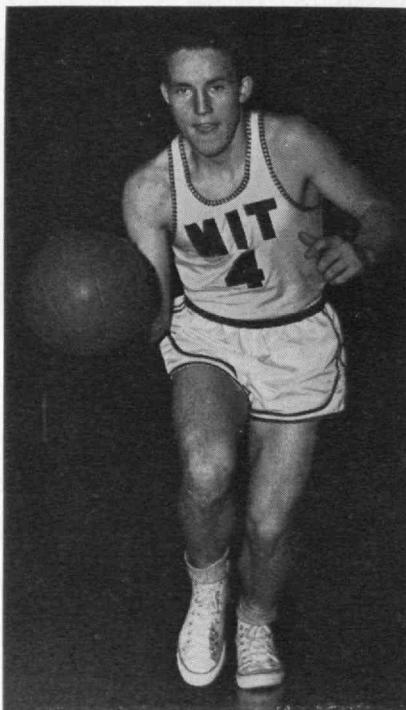
Hockey defenders (from left) Malcolm D. McMillan, '62, Isaac Shanfield, '62, and Bardwell Salmon, '62, were effective.

## A Memorable Year for the Athletes

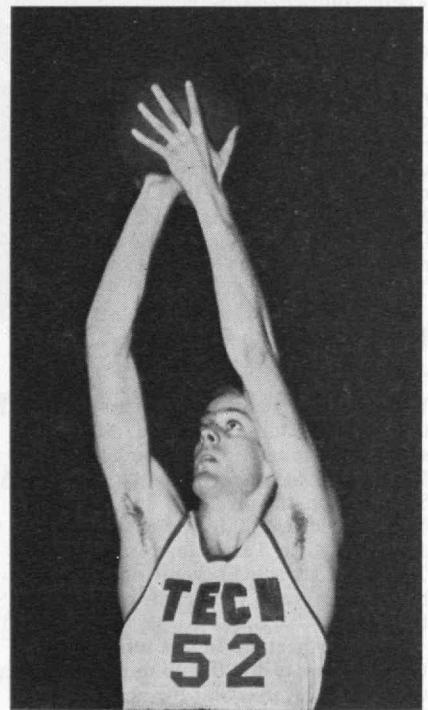
M.I.T.'s hockey team had its best record in 40 years this winter, with 10 victories and 5 losses, and ranked among the East's 20 top teams. The swimmers defeated Springfield in that annual meet for the first time. The rifle team closed its season with a 7-1 record. And the basketball players won 15 games in a row to set a 17-4 record.



JIM EVANS, '63, was top wrestler. He lost only one match in three years of dual competition, and led his team in its third consecutive winning season this year.



CHARLES W. GAMBLE, '62, is only 5 foot 9, but starred in M.I.T. basketball this winter for the third year. Coach Jack Barry called him "my best defensive guard."



DAVID H. KOCH, '62, captained the basketball team with the longest winning streak since the sport was started at the Institute in 1900. He averaged over 20 points a game.

# Class News

'91

**Francis Bradford Choate**, one of our most interesting fellows, now lives with his wife Rose in their own house in San Mateo, Calif. In October I wrote Brad how my daughter had driven from Hastings to Littleton, Mass., and the very next day had taken me from Boston to my New York home. I also wrote that the life-sized statue of his kinsman, Rufus Choate, had been removed from the old Court House in Boston where it had stood for 63 years. Rufus Choate was the leader of the Massachusetts bar in the Nineteenth Century. Bradford's reply, written painfully, is as follows:

"San Mateo, Calif. November 1, 1961: My dear and honored friend. Yours of the 19th of October much enjoyed, as I do all of your letters. I did not know of Rufus Choate statue, and 63 years ago yesterday, on October 31, 1898, I was general agent of the Union Pacific Railroad at Salt Lake City, among the Mormons, my thoughts far away from any admiration of my kinsman . . . I now notice that the New York Times (Western edition) is to be published in San Francisco. I may have to take that.

"You are lucky to have your good timbers under you to walk so far (3 miles). I can go about a mile and I am tired and out of breath, sometimes before I get home . . . It was a long drive for your daughter Margaret, to Boston and back, in all the congestion. . . . We are both pretty well. I am behaving myself and not smoking or drinking, only a little, and keep in trim. Rose keeps up and sends special kindest thoughts to you and Margaret. I always do that too. So here's adieu to you for the present. Brad."

In a Christmas letter a month later he wrote: "Dear Channing: We mean so much by the word 'greeting' to you and your daughter Margaret, and do wish we could see you and exchange blessings and words we cannot write. Things are about the same. I miss my hearing very much and feel lost at times. Love to you both from Rose and me. Brad." —**William Channing Brown**, Secretary, 15 Forest Avenue, Hastings-on-Hudson, N.Y.

'92

It is the sad duty of the secretary to report the death of another classmate, **Arthur J. Ober**, who died in Lexington, Mass., on January 21. Ober and I represented the class for many years at the annual Alumni Day exercises in June, and it goes without saying that I shall miss this getting together very much. The following is a brief account of his career:

"A native of Arlington, he was graduated from the Massachusetts Institute of Technology in 1892 and was a major in the Army engineer reserves during World War I. He spent most of his career at Newport, R. I. Mr. Ober was past master and a 50-year member of St. Paul's Masonic Lodge, Newport. He leaves two sons, Arthur J., Jr., of Providence; Chester H. of Darien, Conn., and a daughter, Marion L., of Lexington; six grandchildren and eight great-grandchildren. Services were held at Hancock Congregational Church, Lexington, with burial in Oak Grove Cemetery, Medford." —**Charles E. Fuller**, Secretary, P. O. Box 144, Wellesley, Mass.

'95

It was very refreshing to receive a four-page 8½ x 11 closely handwritten letter from our 80-Plus Club member, **Judson C. Dickerman**, 1701 Rugby Avenue, Charlottesville, Va., to which place he and Mrs. Dickerson retired 16 years ago. He has done more than some of us in adding to our American population. He wrote: "Most of us are now in sight of 90 years. I was 88 last October 15 and have a desire or hope to survive to 90, if I can retain a reasonable measure of usefulness to my family. I have four children, two boys and two girls, ranging from 27 to 54 years, and 4 grandchildren: 3 boys and 1 girl, ranging from 25 years down to 20 months. Aside from children and grandchildren, I have no known relatives nearer than 30 cousins. My general health is fairly good though I am somewhat dependent on the doctor. My older son is a very competent physician, living about 40 miles from here. He is a graduate osteopath who by steady contacts and experience has acquired a sufficiently good

knowledge of medical lore to be highly successful in using both schools of practice, working essentially as an osteopath. I have depended upon him for general health helps, which are very effective.

"My eyes have experienced cataract growths for which I had an operation. I now see with one eye only. Oculist's tests show very acute retina vision, slightly better than normal; but the various limitations accompanying removal of cataract added to lack of complete balance make my walk a little uncertain. Yet I get about home and downtown without a cane and do many chores. Aside from singing tenor in our church choir, I have no community activity as I cannot get about at night without an escort; I no longer drive an auto and no public buses run at night. One of the attractions of this university town is its great variety of interesting lectures, exhibits, medical events, and sports centered about the University. I have sometimes thought it might be interesting if the surviving members might express their thoughts on the outstanding courses or professors as they remember them." —**Andrew D. Fuller**, Assistant Secretary, 120 Tremont Street, Boston, Mass.

'96

Fourteen 50-year members of the American Water Works Association are listed in the December issue of its publication, Willing Water. One of these is **Charles G. Hyde**, now emeritus, whose picture showed a vigorous man who made his decisions and insisted upon them standing unaltered. If any of you can see the magazine you will enjoy viewing the excellent likeness and the genial expression. My recollection of Charles is his ingratiating smile of undergraduate days rather than his appearance

## Deceased

EDWARD J. BEACH, '89, Jan. 5  
ARTHUR J. OBER, '92, Jan. 21\*  
WILLIAM D. BRADLEY, '97, Oct.  
JOHN P. ILSLEY, '97, Jan. 27  
WILLIAM F. STEFFENS, '98, Aug. 11\*  
FREDERICK A. WATKINS, '99, Sept. 28  
RICHARD E. DOW, '01, Aug. 30\*  
LEONARD P. WOOD, '01, Feb. 2\*  
FRANCIS BRADLEY, '02, Dec. 18\*  
EMILIO MADERO, '02, Jan. 17  
CHARLES P. TOLMAN, '02, Nov. 25\*  
HENRY H. DUDLEY, '04, July 9  
JOSEPH A. HARADEN, '04, Nov. 19  
EDWARD T. BARRON, '05, Oct. 23  
HOWARD M. EDMUNDSON, '05, Jan. 9\*  
HENRY J. STEVENSON, '05, Jan. 17\*  
GEORGE F. HOBSON, '06, Jan. 28\*  
JOHN M. MORRIS, '06, Nov. 18\*  
HAROLD L. LANG, '09, Dec. 6  
HENRY A. HALE, '10, Feb. 6\*  
JOHN P. WENTWORTH, '10, Jan. 20\*  
ORLIFF H. CHASE, '11  
JAMES B. LITTLE, '12, March 7, 1961\*  
EDWARD MONTGOMERY, '12, Feb. 3  
HENRY C. SMITH, '12, Nov. 13  
JAMES V. YOUNG, '13, Sept. 12  
EDWARD R. GOODWIN, JR., '14\*  
PELLIAN T. C. MAR, '15, Jan. 9\*

HAROLD E. SAUNDERS, '16  
WALTER HARRINGTON, '17, Feb. 5\*  
WILLIAM C. MEHAFFEY, '17\*  
MAURICE GERIN, '21, Jan. 15\*  
SYDNEY S. WINSLOW, '21, Oct. 29\*  
ARTHUR L. JONES, '22, Dec. 17\*  
JOHN E. KARCHER, '22, Dec. 18\*  
FREDERICK F. SWEENEY, '22, Dec. 26\*  
HILTON W. LONG, '23, Dec. 21\*  
HARRISON G. WHITE, '24, Jan. 12\*  
RAYMOND F. CORNELL, '25, May 22, 1960  
JAMES W. DERRIG, '25, Jan., 1961\*  
JOHN A. HERLIHY, '27, Feb. 9\*  
CORTELYOU L. SIMONSON, '27, Feb. 11\*  
BENJAMIN F. VANDEROORT, '27, Jan. 25\*  
STUART E. CURRIER, '28, Jan. 15\*  
MRS. WALLACE H. BROWN, '30  
JOHN J. McELROY, '30, Jan. 28  
JACK V. THOMAS, '30, June 20, 1960  
PETER P. ALEXANDER, '33, Jan. 21\*  
WILLIAM B. O'BRIEN, '34, Feb., 1961  
EDWIN C. PERKINS, '43\*  
RICHARD L. McMANUS, '45, Jan. 18  
RICHARD F. TAYLOR, '46, Jan. 16\*  
WALTER J. CARPENTIER, '56  
RONALD G. HILLEBRAND, '56, Dec. 8\*

\* Further information in Class News.

at the 25th Reunion 40 years ago. . . . Much in Boston has changed, but the B.A.A. track meet is still much like the ones of the nineties. A year or so ago, I met Professor Owens in the cloak room and he recalled running in a relay team with **John A. Rockwell**. The relays are still run, but this year the highlights were the seven-foot high jump and the 16-foot pole vault. Nowadays, the high jump is a tumbling exhibition and in the pole vault the fiber glass pole bends as the vaulter goes up and then snaps, like a spring to aid the man over the bar.

The annual notice of the meeting of the Tech Club of Mexico has been received. It would be of interest to all, if some '96er who enjoyed the Fiesta would send in a detailed report of it. . . . The Boston Luncheon Club met, as usual, at the Old Oyster House on Union Street, another of the not-too-changed spots. . . . This winter the Charles River had ice, but no skating. The sport is now so popular that many rinks have been built by the surrounding towns as well as by M.I.T., Harvard and Boston College. The latter and the rink of the Skating Club of Boston (located on Soldiers Field Road beyond the Harvard Stadium) were the scenes of the recent National Figure Skating Association Championships. Although we don't indulge in pole vaulting or high jumping, we can stand up on skates and enjoy a pleasant and mild exercise.—**James M. Driscoll**, Secretary, 129 Walnut Street, Brookline, Mass.; **Henry R. Hedge**, Assistant Secretary, 105 Rockwood Street, Brookline, Mass.

## '98

**Fred Jones**, our Assistant Secretary, was kind enough to take over the preparation of the '98 Class News for March, '62. In this write-up, he mentioned various Christmas Cards that the secretary had received. In addition, there were numerous others; and it is not too late for the secretary to thank all who sent them. . . . By the means of the respectful and gracious pleadings of the president, the secretary, and the assistant secretary, the members of the class have sent in a number of news items. . . . We are informed that **Howard L. Bodwell** of La Jolla, Calif., had a bad automobile accident a few months ago. We sincerely hope that he will soon be back to normal, at least to the extent that he can continue his golfing. According to latest reports, he still heads the class in this grand honorable sport. . . . A brief note in January from **Lyman F. Hewins** states that he is in Florida with his new 55-foot houseboat yacht. He has had yachts for many past years, but now he can enjoy his favorite diversion to the full. Lyman lives in Washington, D.C. Since graduation in Course XIII, Naval Architecture, he has been with the U.S. Navy at their Experimental Model Basin. At the time of his retirement, he had been in charge for many years of this important work, which has to do with ship forms, testing on designs; also data as to depth bombs, torpedo defense nets, mine anchorage, etc. Perhaps presently Lyman

## Happy Birthday

Congratulations are due in April to an alumnus about to celebrate his 90th birthday; and to 7 and 17 Alumni about to turn, respectively, 85 and 80, as listed below with dates of birth:

April, 1877—**ETHEREDGE WALKER**, '99, on the 11th; **NORMAN E. SEAVEY**, '99, on the 12th; **GEORGE H. LEACH**, '00, on the 14th; **CARL T. BILYEA**, '03, on the 18th; **EDWARD P. BECKWITH**, '01, and **ARTHUR B. FOOTE**, '99, on the 27th; and **EUGENE W. MASON**, '04, on the 28th.

April, 1882—**WALLACE N. MACBRIAR**, '05, on the 1st; **JOHN A. MEGGISON**, '05, on the 2nd; **FRANK E. RAYMOND**, '04, on the 4th; **JAMES E. ROGERS**, '05, on the 6th; **HARRY P. CHARLESWORTH**, '05, on the 7th; **WALTER B. SMALL**, '07, on the 10th; **CHESTER M. BUTLER**, '07, on the 14th; **FRANK S. WILSON**, '04, on the 15th; **SAMUEL H. DADDOW**, '08, and **WILLIAM G. H. WHITAKER, JR.**, '04, on the 17th; **HAROLD C. EDDY**, '07, on the 19th; **EZRA E. WOODBURY**, '05, on the 20th; **GEORGE H. BARROWS**, '05, on the 21st; **GEORGE G. BAY**, '05, and **ARTHUR M. WINSLOW**, '06, on the 24th; **R. C. JORDAN, SR.**, '03, on the 25th; and **THOMAS F. HICKERSON**, '09, on the 30th.

will be good enough to enlarge on this brief note. How about a real paper, Lyman, describing these various facets, for our 65th? It would be greatly appreciated.

Our active President, **Daniel W. Edgerly**, from Chicago, Ill., writes as follows (in addition to other letters): "Ernest Woelfel from Morris, Ill., drops in occasionally. He was here a couple of days ago. Expects to go to Florida in February. Probably will see Carl High in Sarasota and Roger Babson in Mountain Lake Club, Lake Wales." . . . Speaking about notes from classmates, we wish to pay special tribute to Roger W. Babson. Our distinguished classmate has always replied to notes from the officials of the class. In addition, there have been reams of articles concerning his activities, which have been published in the press of the country and in the '98 Class Notes, as opportunity offered. We have a whole drawer full of material which has not yet been included in the class news. . . . As we are now approaching our 65th, it seems appropriate to reach into this drawer, and pick out a few more of the achievements of our distinguished classmate. Roger is now 87, according to his recent Christmas card. We quote from a recent article by Dickson Hartwell: "Everything is Babson's business. If you eat a lobster or turn in a fire alarm, the odds are 10 to 1 Babson gets a profit. His lobster and fire alarm companies are the world's largest. Sales of \$150,000,000 will be rung up this year in chain stores he controls. He is part owner of New England's largest (\$2,500,000 a year) sand and gravel business. The Boston Stock Exchange, two banks and 140 other tenants pay him rent in his 11-story \$8,000,000 Boston office properties. Babson sheep lands extend over more than 200 miles across New Mexico and Arizona—800,000

acres from Albuquerque to Winslow. He has a 12,000-acre Florida cattle ranch."

From the Alumni Association we have a note advising us of the passing of our classmate, **William F. Steffens** of Yonkers, N.Y., on August 11, 1961. We regret the passing and that we have no further particulars.—**Edward S. Chapin**, Secretary, 271 Dartmouth Street, Boston 16, Mass.; **Frederic A. Jones**, Assistant Secretary, 286 Chestnut Hill Ave., Brighton 35, Mass.

## '01

As these notes are being written about the middle of February, some replies to the Class Letter have already begun to come in. This is very encouraging if it will only keep up. . . . I have to report the death of **Richard E. Dow**, V, of Hamburg, N.Y., on August 30, 1961. I have no further details of his death. He was for some time a regular attendant at our reunions. . . . Also deceased is **Leonard P. Wood**, I, of White Plains, N.Y. He was never able to attend the reunions, but I heard from him once in a while.

The first reply to the Class Letter came from **Joseph P. Catlin**, VI, of Plainfield, N.J. He says: "Still going strong. Active President Virkotype Corporation of Plainfield, N.J. My first job working vacations 1898. Busy ever since. Tried retirement about 10 years ago. Lasted two months then back to work. Keeps me young. My hobby is giving." . . . From **Dennis F. Haley**, III, New York City: "I decided last October to quit all professional work. Up to then I had been quite busy with consulting work. Have been in excellent health, but at the moment a flu germ has sneaked up on me and makes me feel my age." . . . This makes a good start for class news. Please keep them coming.—**Theodore H. Taft**, Secretary, Box 124, Jaffrey, N.H.

## '02

Father Time continues to take his toll. Through a clipping from the Philadelphia Inquirer we learn of the death of **Francis Bradley** on December 18, 1961. Bradley was former president and board chairman of the Midvale Steel Co. He joined the company shortly after his graduation from M.I.T. and became president during World War II. He became chairman of the board in 1948, several years before his retirement. The firm became the Midvale-Hepenstall Company in 1955. He was also president of the board of managers of Germantown Hospital, he held membership in the Germantown and Philadelphia Cricket Clubs and of the Sunnybrook Country Club in Philadelphia and the Burlingame Country Club of San Mateo, Calif. Bradley was a widower, his wife having died a number of years ago.

A letter received from Lee P. Tolman, '36, states that his father, **Charles P. Tolman**, our classmate, passed quietly away on the night of November 25. The letter says, "He was 82, and had been active as a mechanical engineer for more than 60

years, from the part-time work he did while in Tech to that Saturday afternoon when he laid aside his tools for the last time. A more understanding and helpful man I have never known." Tolman was in Course VI and was employed by the National Electric Company throughout his years at M.I.T.; he became chief-engineer about a year after graduation. The company made air brake equipment, air compressors, and electrical machinery. He was in charge of design and installation work. Shortly afterwards he became chief engineer and chairman of the manufacturing committee of the National Lead Company. In 1922 he set up a general consultation practice and so continued until his death. He did a large volume of original work, had 44 U.S. patents, and worked as a patent expert. He described his activities in answer to our 50th Reunion questionnaire as follows: "Much of my work has been administrative, both business and engineering, and during the past 10 years the greater part of my consulting work has been of an administrative character in connection with the prevention of blindness. This began with an engagement by the National Society for the Prevention of Blindness to investigate the conditions and practices in industrial plants with respect to eye health and eye protection. This led to the organization of an educational program by mail which has to an extent become international and has been used in the formulation of industrial health codes. In connection with this program I learned of the need for instruction in industrial aspects of ophthalmology in medical schools, and initiated and developed a course in this subject which is now given in some 16 American medical schools and in some 10 or 12 foreign countries. More recently, during the last three years, I have given a great deal of attention to the subject of prevention of blindness from glaucoma. It seemed obvious that an instrument was needed to enable the practitioner to discover this disease in its early stage, in which stage the only indication is the elevation in the eyeball. I designed an instrument for this purpose and it is in extensive use. This program has developed very rapidly and has also become international in scope. I am very much interested in this work because I originally wanted to go into medicine but family fortunes didn't permit the long and costly preparatory period. My next choice was pure physics, but there again the earning capacity was too little and the development of it too long, so in a sense I am for the most part giving my attention to the field in which I was primarily interested."

He was a fellow of the American Society of Mechanical Engineers and a life member of the American Institute of Electrical Engineers. He was also a member of the Illuminating Engineering Society, the National Safety Council, of which he was also a past president, and the Pan-American Association of Ophthalmology. Tolman resided and practiced his profession in Kew Gardens, N.Y.

The new address of **Stephen A. Gardner** is 792 Nantauk Avenue, New London, Conn. . . Little news has percolated through the self-imposed iron curtain from

you fellows, so I can toss little back. Our reunion plans are set, as you will know by the time you read this, and I hope to see you there.—**Burton G. Philbrick**, Secretary, 18 Ocean Avenue, Salem, Mass.

## '03

As no news was provided by the Alumni Office nor by any of our classmates for this issue of The Review, your secretary thought the inaugural speech of President Henry S. Pritchett of M.I.T. at the Commencement of 1900 would stimulate old memories of student days. The annual reception of the Alumni Association for the graduating class of M.I.T. was held in the evening at the Exchange Club. This was the opening event and a proven success as the entire senior class was present in addition to nearly 200 Alumni of the Institute. The features of the evening were the speeches of President Crafts, soon to leave office, and of President-elect Pritchett, soon to assume the administrative chair of M.I.T. The Executive Committee of the Alumni Association in charge of the reception consisted of President Edwin C. Miller, Secretary Edward F. Miller, Charles T. Main, Frederic H. Fay and Howard C. Forbes. After a gorgeous supper had been served in the largest hall of the club, President Miller opened the program with a brief address directed especially to the graduating class. He said, "Each one of us, in taking a degree at the Institute, becomes a member of the Alumni Society, and it thenceforth becomes the duty of every one of us to further the interest of the Institute in every way possible. What has been done along these lines is most worthy, and it is earnestly expected that the Class of 1900 will follow faithfully in the footsteps of those who have gone before them.

"We have with us tonight, one who has for four years cared faithfully for the best interests of Technology, and in the future, if not as president, yet as an honorary member, we shall always be glad to hear words of information, wisdom and counsel from President Crafts." President Crafts said, "I shall deem it in the future one of my dearest pleasures to be able to maintain my interest in Technology, in the students, in the Alumni and in the Faculty. I am peculiarly related to the present graduating class, inasmuch as I began my present duties almost at the same time that they entered the Institute, and I leave the presidency at the same time that they leave their alma mater. Thus I feel not only closely related to the class but almost an integral part of it. I cannot but feel how much the Institute has grown during my brief term, and in how great a degree this is due to the noble men who have held the presidency in the past. Large funds have recently been acquired and prosperity is seen on all sides in additions of both land and money; and the only thing to be regretted is that those to whom so much of this is due have not lived to enjoy the results of their work. When President Francis A. Walker was chosen by the

Corporation some 20 years ago, he was little known as a man fitted for presidential duties. He was extremely modest at the beginning and went slowly until he knew what was to be done. Then he went ahead with all his vigor and advanced the interests of the Institute in every way possible until it attained its pre-eminence in the scientific world. Like President Walker, in many ways, is he whom it is my mission to introduce to you this evening; one who is of nearly the same age that General Walker was when he came to you and one who has already distinguished himself in mathematics, in engineering and in science."

Dr. Henry S. Pritchett, who was in Boston for the first time since being connected with Institute affairs, was greeted with loud and prolonged applause. He said, "I am not here in any official capacity, but rather as the latest member of the Class of 1900. As such it seems fitting that I should be very modest and say nothing. I am in a situation similar to one that Admiral Dewey related to me recently at a dinner in Washington. When the Admiral was in New York, Richard Crocker was on the committee of reception and as he was leaving to go to Washington, Crocker took Dewey by the arm and said to him in an advisory manner; 'Dewey, in Washington you will meet many people and many people will ask you to speak but take my word for it and don't say anything.' In the light of subsequent events, I think this good advice, that I might do well to follow.

"My reasons for coming here to the Institute of Technology may be briefly stated. Here is embodied the very highest standard of technical education. Here a man learns some one thing, and learns it well. He needs to be held up to the minds of all as one entering on a new epoch in engineering. Our nation has just come into possession of new countries beyond our natural confines and in these will soon arise many new problems which will need the very best of engineering skill that we can produce. There are to be built canals, railroads, tunnels, bridges and the like, and in no place are men so well fitted for this work as at Technology. I come here very gladly, I assure you. As I look back on my predecessors I felt some hesitation in coming, especially when I think of the high ideal set by such Presidents as Rogers, Runkle, Walker and Crafts. I feel sure of the good grace and affectionate thoughts of all of you; and I feel that the president that has just addressed you will ever be one of us, and will never be beyond our thoughts and remembrance.

"I have but a few words to say, and these purely of a personal nature. I never wish to be connected with any real work unless I am at the same time in close personal relations with the men associated with me. I put a high value on their advice and on their friendship. I thank you heartily for the cordial welcome that I have been accorded. Though I have not hitherto been one of you, yet I hope that as years go on we will come to know each other better and better, and that the friends and the Alumni of the Institute of Technology will welcome me not

only on account of their regard for the Institute itself, but also on account of their personal friendship for me."

Professor Robert H. Richards, '68, one who had been most intimately connected with Technology life, and who, as the seventh pupil to enter the Institute, had been in it ever since either as a student or as a teacher, was then the head of the Mining Department; he gave a brief history of the previous administrations and of the Faculty's development in the aims of independence, love of the students, Truth and upright character in its highest sense. . . . Dr. Samuel J. Mixter, VIII, of the Class of 1875, gave some concluding remarks on his experiences and the value of his Institute education. . . . During the evening, papers were passed round showing the progress in collecting for the Walker Memorial Gymnasium Fund. This fund was started by the Alumni Association for the purpose of building a tribute to President Francis A. Walker, and from the 32 classes that had graduated from the Institute, more than \$30,000 had already been collected. Four of the classes, those of '70, '78, '85 and '93 contributed more than \$2000 each, thus surpassing the amount allotted to each class.—**John J. A. Nolan**, Secretary, 13 Linden Avenue, Somerville, Mass.; **Augustus H. Eustis**, Treasurer, 131 State Street, Boston, Mass.

## '04

The day after the notes for the March issue were sent to The Review office a note arrived from Class President **Currier Lang** announcing a proposed trip to the Virgin Islands for a stay of four to six weeks. The house which he and Carolyn built two years ago has been rented for a year and will probably be sold. Currier is spending his time at a hotel with some Norwalk friends. . . . The suggestion made in a recent edition of these notes that our treasury balance is rather weak has brought a check or two which gladdened the heart of our treasurer. . . . After two months with no obituaries we are obliged to record that two classmates have left us. **Joe Haraden** of Course VI, a well known automobile dealer in Schenectady, N.Y., died on November 19 and **Henry Dudley**, also Course VI, died on July 9 at St. Petersburg, Fla. We have no further details at this writing.—**Carle R. Hayward**, Secretary, Room 35-304, M.I.T., Cambridge, Mass.; **Eugene H. Russell, Jr.**, Treasurer, 82 Devonshire Street, Boston, Mass.

## '05

My most prolific correspondent, **Willard Simpson**, besides sending me a subscription to that Texas brag monthly "Texas Parade," and a box of delicious Texas Ruby Red grapefruit, writes another most interesting letter from which I quote. "Here it is almost Christmas, and I haven't gotten my buck yet. I have a fine gobbler, which I shot a week ago. Some of us deer hunters I guess are get-

ting pretty choosey. I have seen several deer with four and six points and lots of spikes, which are unlawful to kill, but I don't like to kill one under eight points. I belong to a group which leases a place to hunt deer; our rules are that we take no deer with less than eight points and that means pretty good horns. Although the construction business has dropped off considerably in the last two or three months, we have been just busy. It looks like we are going to be swamped right after the first of the year. People are holding off, waiting for something, and I know what is causing them to wait. You may think that this part of Texas is 'Grandfather Democratic,' but we are not. We are gradually forming a very strong Republican conservative group which is made up of practically all businessmen of all kinds. We have a wonderful Republican senator, Mr. Tower, in Washington now. The businessmen and the people on whom this part of the state depends for success are a conservative group that were originally conservative Democrats." . . . **Bob Young** in wishing me a Merry Christmas asks to be remembered to **Harry Charlesworth** "and all the gang I knew. I made the pretty pink paper on which this is written 40 years ago." I imagine at the Champion International at Lawrence, where he was boss for many years. . . . **A. Warren Wells** reminds me that he has moved from Vernon, Fla., to 601 Lantern Lane, Orange City, Fla. . . . **Alfred H. Kelling** has moved from Fort Lauderdale to 5506 Glenwood Road, Bethesda, Md.

Just heard from **Fred** and Dorothy **Poole**. They were just starting out (February 6) on a six-week shelling and birding trip to Florida, but let's hear it in his own words. "With movie shooting thrown in to complete her film on molluscs which already has been a year in the making, from Maine to Florida. We left home at 10:00 this morning and will be back in Woodbury about March 20. We covered about the same ground last year but a month later in the season. We will spend about two weeks in Coconut Grove, Miami and Fort Lauderdale with a two- or three-day flight to Bimini, meanwhile, for both shelling and birding. Then we will drive to Sanibel for about 10 days, attending their annual 'Shell Fair' (as you may know, Sanibel is the 'shelling capital' of the country), where we will exhibit fossil shells about 17 million years old which we collected last year in the Everglades about 40 miles south of Lake Okeechobee, about 100 species. Then we expect to stay a week in Apopka visiting Rich Sheafe, '04, and his wife Doll, both my boyhood playmates in Harvard, Mass." . . . **Frank Chesterman**'s Christmas card told me that at an M.I.T. conclave at Cambridge in October he was chosen as chairman of the Visiting Committee on Humanities. It reminded him that many years ago when he was chairman of the Committee for the Department of English, his committee recommended the establishment of a Department of Humanities. It must have been very pleasing for him to see 'his baby' well founded and going strong. . . . Willard and Mary Simpson's card

(mailed in San Antonio, Texas, mind you) shows an old New Hampshire wood road and bridge covered with snow, sort of carrying coals to Newcastle. . . . Helen and **C. Dean Klahr**'s card had a very good, colored photograph of themselves, a very good idea, so we can see what pals of 60 years ago look like now. . . . **Fred Eaton**'s card from Las Vegas is definitely a White Christmas Card (more of New England).

Cards from the following, while not bearing news, at least indicated their continued class interest, but also allow the inference that they are in state of good health: Charlie Mayer, Ione and Arthur Balkam, Alice and Bill Spalding, Bill and Peg Ball, Sarah and Isie Nye, Gib and Elizabeth Tower, Hub and Helen Kenway, Bob and Jennie McLean, Henry and Alice Buff, Ted and Edith Steel, Henry and Mildred Stevenson, Andy and Frances Fisher, Mildred (Wheeler) Thompson, Bert and Alice Files, Lucy and Piggy Bartlett, Leonard and Bernice Cronkhite, Court and Elizabeth Babcock, Frank Carhart, Arthur Russell, A. Warren Wells, Harry Charlesworth, Gilman Joslin, George Rhodes, Sam Seaver, Walter Eichler, Bob Young, Laurence Fuller, Charles Smart, Dis Caine, Walter Cain, Erwin Bender, Fred Eaton, Carlton Atwood and J. Wallace Taylor.

I have a letter from **Alfred C. Bedortha**, Windsor, Conn., who was 90 years old on January 31, 1962, in answer to my letter congratulating him on reaching his 90th birthday. He was with us taking special courses in chemistry during 1903 and 1904. He has been in the same business, that of making cigar makers' tools, tuck cutters and mechanics' wood levels, since he left M.I.T. in 1904. He still works some in the shop, says he is well, says that his principal achievement is in being "the oldest man in the oldest town in Connecticut." . . . There are two deaths to record. **Henry J. Stevenson, II**, died on January 17, 1962. I am quoting from a clipping from his home town (Andover, Mass.) paper. "Henry J. Stevenson, 79, 68 Cheever Circle, Andover, died at the New England Baptist Hospital, Boston, Wednesday morning. He was born in East Boston. He was a graduate of the Massachusetts Institute of Technology with a degree in mechanical engineering. He was employed by the Singer Company of South Bend, Ind., the Industrial Instrument Company, now the Foxboro Company of Foxboro, and for the past 38 years by the Davis and Furber Machine Company of North Andover. He was a life member of the New England Historic Genealogical Society of Boston, a member of the Essex Institute in Salem, the Sons of the American Revolution and the Andover, North Andover and the Wolfeboro, N. H., Historical Societies. He was a member of Noddle Island Lodge, A.F. and A.M., Boston and the Acacia and the Foremen's Clubs of the Davis and Furber Company, and the Andover Service Club. He leaves his wife, Mildred (Jenkins) Stevenson and a sister, J. Estelle Stevenson of Andover." This was a great personal loss. I knew Henry very well while at M.I.T. and at reunions he was a very loyal and a very

nice person to have around. I have tendered to Mildred both in a phone call and a letter the sympathy of the class, and sent floral remembrance in the name of the class. . . . I also have to record the death of **Howard M. Edmunds** in New York on January 9, 1962. I have little to report. We, of course, remember him as a typical Englishman when he entered with us in 1901. During World War I he served in France as a captain in the Scots Guards, returning to this country in 1927. Amongst his places of employment was the R. Hoe and Company, from which concern he retired in 1944. I remember sitting next to Howie at an M.I.T. get-together in New York several years ago, but he didn't let the conversation become very personal, hence I knew little of his family or business life. He lived at 165 E 83rd Street, New York City, but a letter "to whom it may concern" at that address brought no results. —**Fred W. Goldthwait**, Secretary and Treasurer, Center Sandwich, N.H.; **Gilbert S. Tower**, Assistant Secretary and Treasurer, 35 North Main Street, Cohasset, Mass.

## '06

The daughters seem to be going places too! In the March notes you heard of the success achieved by **George Shingler's** daughter, Adele, in teaching physics at Edgewood High School in Orlando. In the Boston Herald of January 14 appears a feature article in Noah Gordon's "Science and The Man" series entitled "Flavor still a mystery to Science." The column and-a-half is about Dr. Emily L. Wick, '51, V, Ph.D., the daughter of **James L. Wick, Jr.**, II, and Clare Wick of Youngstown, Ohio, and Rockport, Mass. Those who attended the convocation banquet at the Faculty Club in April, 1961, had the pleasure of meeting Emily then. The article starts with a stimulating question: "What makes your mouth water when you smell your favorite meal cooking on the stove? What makes one food delicious and another horrible tasting? The answer, of course, is flavor. But what is flavor? We know that flavor is contained in trace components, Dr. Emily Wick, Assistant Professor of Food Chemistry at M.I.T., told the Herald." It's a long article, telling that her dad was president of the Falcon Bronze Company and "he's a graduate of M.I.T. Class of 1906," about getting her bachelor's and master's degrees at Mount Holyoke, where she majored in chemistry, was a member of the fencing team, and has served as treasurer of her class ever since. On the advice of her father, after a few years of teaching at Mount Holyoke, and of her brother, Dr. Warner A. Wick, now associate dean of the undergraduate college at the University of Chicago, Emily decided to study for her doctorate. Why did she choose M.I.T.? She was quoted as saying, "there were one or two other schools that were as good (now Emily!), but I knew that I'd have to work like the devil. That meant I wanted to stay around Rockport where

the family had a summer place." The article concludes: "Dr. Wick lives at 27 Atlantic Avenue in Rockport, in a house on the harbor directly opposite Motif Number 1. An ardent sailor, she is a long-time member of the board of governors of the Sandy Bay Yacht Club (your secretary's grandfather, Bennett Griffin, also an ardent sailor, was commodore of the club in the 1880's). She has owned several craft, at present is skipper of a Firefly sailing dinghy. "We race every weekend in season. My crew is Jay Peters, 13. He's stalwart. He doesn't mind if half the ocean pours down his neck." Lucky Jay! But what is flavor!

Class President **James W. Kidder** joined me at the Faculty Club January 19 for the 356th meeting of the Alumni Council, to which I had also sent an invitation to **George R. Guernsey**. A few days before the meeting his brother phoned to tell me that George and Elsie were then in Phoenix, en route to the state of Washington, and early in February I heard from George in Phoenix. They had left Wellesley January 10 and, after spending a day with daughter Mary in her new house in Wilmington, Del., had visited grandson George at the University of North Carolina at Chapel Hill. Then going west on the southern route, they stopped at Tuskegee Institute and the Carlsbad Caverns, visited for a couple of days with cousins at Tucson and arrived at Elsie's relatives in Phoenix on January 23 "weather and roads good all the way." They expected to start for southern California around February 20 to spend a month there before heading north for Vashon Island near Seattle, to visit daughter Helen and take in the big fair due to open April 15, then return around June 1. Incidentally, George has loaned me two kodachromes of the '06 tables at the Alumni Day luncheon last June. They are really good and requests for the two (3x5) prints in color will be filled promptly on receipt of a dollar bill.

In January I had a long (typed!) letter from **Bill Abbott**, entirely about **Johnny Morris**. Seems he had been wondering why he hadn't received the usual Christmas card, nor any letter previously. Then he had heard from John's daughter saying that her father had passed away on November 18, 1961. Bill continued: "John was one of a group that lived at Technology Chambers, and we saw each other daily at meals and around the living room in the evening (shows the present crop what a cinch Tech was in 'them days'). It was much like a frat house, and we formed several lasting friendships." By checking my only source, for our senior year only, I find there were 28 men then living at Tech Chambers who are definitely in '06, of whom 15 are now deceased. As Bill had thoughtfully given me the name and address of the married daughter, I promptly sent a message of sympathy to her and soon received her reply which included some information that was lacking in my available sources. John M. Morris, VI, was born January 28, 1884, at Fort Monroe, Va., and as his father was an army officer, John's early schooling probably occurred at or near the various posts where he was stationed,

then at some prep school before he entered with us in 1902, when his home address was Fort Getty, Charlestown, S.C., later the Presidio, San Francisco. John was a member of the Electrical Engineering Society and in the cast of two Tech Shows, the Chinaman in "Simon Pure Brass" and Mamie, the barmaid at Heinie's Inn, in "The Chemical Maid." He did not return senior year and our records indicate that he soon joined the Westinghouse E & M Company in Los Angeles, becoming sales engineer and assistant to the manager. The Technology World War I record states only that he was "commissioned captain, Engineers, 8 May, 1917." However, Bill related how "John and I were majors in the Chemical Service, as it is now called, about the same time. He stayed in the service after the war, however, and went up several grades, acting as regional officer for a large sector in the West." John was evidently reactivated in 1941 as the World War II Record section of the 1948 Alumni Register has this entry: "Colonel, USA, February 1941–March 1944" and his address in May, 1941, was U.S. Army, Headquarters 9th Corps Area, Presidio. John retired as a colonel in 1944 and his address since then has been Salt Lake City. His daughter stated that he spent the years following his retirement "until his death, composing and publishing religious music. He was also active at St. Marks Episcopal Cathedral and served as vestryman and choirmaster." That checks with John's once confiding in Bill "that he had started to sing in a choir" and Bill's rejoinder that it "was the end of his bachelor days." John married Marie Frances McLean in Los Angeles on June 2, 1909. Survivors are two children, Charles and Frances McLean Reynolds, three grandchildren, and a brother, Frank B., of Portland, Maine.

Early in February the Alumni Office received a clipping (Portland Express) containing the obituary of Colonel **Hobson** who died in a Portland hospital on January 28, 1962. **George Foster Hobson**, I, Delta Tau Delta, was born in Lowell, Mass., July 17, 1885; he prepared at Howell High School, was a member of the Civil Engineering Society, and of the Lowell Club (with Steve Kearney, Henry McCue, Bill Moffat, and Art Thomas). His thesis was "Design for a Water Supply System for Westford" with the late **Nestor M. Seiglie**. After graduation he had several short shifts that must have been interesting and valuable for the experience, first on the engineering staff putting the Pennsylvania Railroad tunnel under the East River; then as engineer for the Rocky Mountain Cattle Company of Wyoming, building dam and irrigation works; as assistant in Lowell City Engineer's office; civil engineer and superintendent of construction, Quartermaster's Department, Boston; computer and estimator, supervising architect's office, Treasury Department, Washington, D.C. In May, 1917, he was called to active duty as a captain in the Engineer Reserve Corps, first at Camp Belvoir, then with the 305th Engineers at Camp Lee, then as commanding officer 3rd Battalion, 7th Engineering Training Regiment

at Camp Humphreys. George went overseas and was in the Aisne-Marne offensive with the 80th Division; was given the rank of captain in the regular army in 1920 and served in the Army of Occupation at Coblenz. From 1921 to 1944 he served the Army in various capacities and in various locations; in the Plans and Training Division, Quartermaster General's office; as an "additional number" of the General Staff, 1924 to 1926; construction quartermaster for the first permanent unit at Fort Belvoir; one of the three original members of the Fredericks and Spotsylvania Battlefield Commission; in 1931, major GFH Departmental Quartermaster, Manila, Phillipine Islands; in 1933 he completed two years work with the American Battle Monuments Commission, then was at Schuylkill Arsenal, Philadelphia; in 1939 he was major and construction quartermaster at Quarry Heights, Canal Zone; during World War II, 1941 to 1944 he was assistant commander and executive officer of the Quartermaster School at Camp Lee "during a vast expansion and training of new officers." At his retirement in 1944 he was awarded the Legion of Merit of the War Department, having previously received a Letter of Commendation from the Secretary of the Navy for his services at the time of the disastrous fire in the dirigible "Hindenburg" at Lakehurst. George married Clara Francis of Lancaster, Mass., in August 1914, and they had two sons, George (deceased) and John, who has three sons, of Willow Grove, Pa. Surviving also are a sister, Sarah, with whom he made his home in Portland, and a brother, Charles F. (M.I.T., '11) of Charleston, W. Va. In spite of his continuous activity, George maintained his interest in his alma mater and his contacts with classmates. He was the class representative on the Alumni Council from 1909 to 1912, and being free after his retirement, attended our 40th Reunion at East Bay Lodge. There are 30 entries on his cards in the secretary's file and he frequently sent class dues. It was disability that forced his retirement and as many as you know. George has been physically handicapped since then as a result of several operations, but he kept his chin up! He was active in St. Albans Episcopal Church at Cape Elizabeth and in the construction if its new building; a member of Sons of the American Revolution; the Maine Historical Society, Washington, D.C.; Masonic Lodge and 32nd Degree Valley of Portland Scottish Rite.

—**Edward B. Rowe**, Secretary-Treasurer, 11 Cushing Road, Wellesley Hills 81, Mass.

## '07

The important item for all '07 men to keep in mind is our 55th Reunion at Oyster Harbors Club, Osterville, on the Cape, June 8-10. Your secretary sent out preliminary inquiry cards and, as of February 14, has received 15 definite "Yes" replies, 16 "Hope so," and 50 "No" replies. There are still some 45 members to hear from.

I had a nice letter from **Willis G. Waldo** who is living at West Palm Beach, Fla., and still engaged in active engineering. He writes, "I am still busy doing structural work on foundations and marine structures here in South Florida. I have been able to do some soliciting for the Second Century Fund among the M.I.T. Alumni in the West Palm Beach area and have found that the majority of our Alumni here have been willing to help." Willis expects to be engaged in engineering work in Latin America this summer so doubts his ability to attend the reunion. In returning their reunion cards, many of the men whom we have not heard from for a long time added brief bits of information. **Ernest A. Miner**, Course I, is still at Punta Gorda, Fla., but gives a new address: R.R. #3, Box 1566. He reports one morning a temperature of 39 degrees in his kitchen and two weeks later, an 89-degree reading.

**Herbert A. Sullwold**, IV, says he has been retired for six years. . . . Professor **Ralph G. Hudson**, VI, will be in Florida at reunion time. . . . **Edward G. Lee**, I, sends best wishes and reports he is relaxing on the Island of Sanibel, Fla., "where the beach supplies the most beautiful shells in the U.S.A." . . . **Franklin O. Adams**, IV, at Tampa, Fla.: "Closed my architectural office three or four years ago due to the progressive invalidism of my son. Know of no other classmates in this area." Some of you Florida men should look up Frank. . . . **Harold C. Libby**, I: "Arthritis prevents my going to the reunion." . . . **Seymour J. Egan**, XIII: "The count of grandchildren stays at 14." Write your secretary if you can better this. . . . **Wheaton I. Griffin**, I: "Sorry I cannot be there on account of my health." . . . **Anthony B. Arnold**, II: "will be attending my 60th at Yale in June." . . . **Robert K. Taylor**, XI: "Resigned from the New York Transit Authority at the end of 1955. Since then have been associated with John V. DiNan, Construction Engineers." . . . **Walter B. Kirby**, IV: "A slight stroke is curtailing my activities. Greetings to my fellow architects." . . . **Carl Bragdon**, X: "My book was published last month. I may start another one soon." . . . **Roland H. Willcomb**, III: "The summer months are occupied by children and grandchildren on vacation at grandpa's place in Puget Sound."

**Floyd A. Naramore**, IV, "served five months in a hospital last year and the result from that is the only thing that will prevent me from attending the 55th Reunion. I am lucky and recovering fast." . . . **Erskine P. Noyes**, I: "I hope I can make it; but as in past years, it is extremely doubtful because of my wife's health." . . . **Parker Dodge**, II: "I shall be in Brooklin, Maine, for the summer. I want to come. Don't write me off." **Bob Albro**, I: "celebrated our 50th wedding anniversary last September. Still using a cane but am getting along fairly well." . . . **Hugh Pastoriza**, VI, is "retired from business as of June, 1961." . . . **Edwin W. James**, I, "retired from U.S. Government service in 1953. Retired second time from prosperous consulting in 1959." . . . **Arthur O. Christensen**, III: "I plan

to bring my 16-year old grandson, speedboat, and skis."

I received a copy of the Mt. Washington Observatory News Bulletin for December, 1961, with an interesting illustrated article by **Milton E. MacGregor**, VII, entitled, "My first Ascent of Mount Washington," which he made in 1911. . . . Plan now to attend our 55th!—**Phil Walker**, Secretary and Treasurer, 18 Summit Street, Whitinsville, Mass.; **Gardner S. Gould**, Assistant Secretary, 409 Highland Street, Newtonville 60, Mass.

## '08

Our fourth and final dinner-meeting of the 1961-1962 season will be held at the M.I.T. Faculty Club in Cambridge on Wednesday, May 9, 1962 at 6 P.M. Try to be with us, won't you? The Florida vacationers will have returned by then, and it is hoped that those on the sicklist during the winter will have recovered so that they can make it. Final plans for our 54th Reunion in June will be discussed. We would appreciate any suggestions. . . . Have you subscribed to the Alumni Fund? If not, please do so soon; '08 has done well in the past. Let's keep it up. How about some news of yourself or classmates you have seen? Even a postcard would be much appreciated.—**H. Leston Carter**, Secretary, 14 Roslyn Road, Waban 68, Mass.; **Joseph W. Wattles**, 3d, Treasurer and Assistant Secretary, 26 Bullard Road, Weston 93, Mass.

## '10

**Henry A. Hale** died February 6 after being in poor health for two or three years. I first really knew Harry when he was chief safety engineer for the American Mutual Insurance Company in 1915. As chief safety engineer he organized this department by employing **Orrin Crommett**, **H. Gordon Hawes**, Jr., and your secretary as assistants—it was a 1910 organization. We remained together until the outbreak of the World War I, when all of us enlisted or became officers under the Reserve Officers Act. Henry and I attended training camp together at Fort Belvoir, Va. After returning from the war, Henry entered the insurance business and within a few years he formed the firm of Hale and Company which proved to be very successful. Not only was Henry a successful businessman, but he also was very active in the Army Reserves, becoming commanding officer of the 376th Reserve Regiment with a rank of colonel. During World War II he was on active duty in the military government and served in the Middle East and in Italy.

**John P. Wentworth** died January 20 after a short illness. John was a partner in the firm of Metcalf and Eddy, Consulting Engineers in Boston from 1924 until 1962, at which time he retired. He was a graduate of the Malden High School and served in World War I in the U.S. Army Sanitary Corps. In World War II he served with the New England Division of the U.S. Army Engineers. He belonged to

the Malden Post of the American Legion, the American Society of Professional Engineers, N.E. Waterworks Association and the American Society of Civil Engineers. I became very well acquainted with John during the Second World War when I was stationed with the N.E. Division of the Army Engineers. John and I headed up the department for the Renegotiation of Army Engineers contracts for New England. John had an ability to interpret legal documents, but my ability in this line was totally nil. However, we managed to receive commendations on the results of the cases renegotiated. On the various trips required in this work, John and I became very good friends and fully enjoyed each other's company.

I had a letter from **Phil Harris**, excerpts of which follow: "Your write-up for '10 in the January number of *The Tech Review* is so interesting it opens up vistas for future issues. If you can persuade members of the class to write how their business careers developed after 1910, articles would be avidly read. For classmates they would be illuminating and for rising generations positively educational. The stumbling block is always an overwhelming fear of passing the bounds of modesty." Also, Phil desires a copy of a 1910 *Technique*; I managed to send him one but he wants another. Can any classmate help him out? Also, why not follow up his recommendation of sending to me a resumé of your business careers as suggested in his letters?—**Herbert S. Cleverdon**, Secretary, 120 Tremont Street, Boston, Mass.

graduated from Yale University in 1909, and did postgraduate work at Hamilton College and M.I.T. He was president and treasurer of the Millers Falls Paper Company from 1920 until he retired in 1949. He served as deacon of Second Congregational Church, and was a member of the church Men's Club. He was active in Norman Bird Club. He was a member of the Deerfield Valley Arts Association, a Greenfield Country Club director, and a former Kiwanis Club member. He is survived by his wife, Jane, two married daughters, a son, six grandchildren, two brothers, and several nieces and nephews. Our sincere sympathy to them all. . . . **Orliff H. Chase, IV**, whose last known address was 28 Lewis Street, Newton 58, Mass., has been reported deceased, with no specific date. He was listed as living in the 1961 Alumni Register.

Notes were received from **Alec Yeareance** and **Bob Morse** with respect to **Dick Ranger**, whose death was reported in the March Review. Alec wrote: "When Dick was general manager of *The Tech* I was advertising manager, and we became good friends. I saw him from time to time after graduation and always admired his brains, modesty and industry." Bob wrote: "I went to Dick Ranger's funeral in Newark. He was one of my best friends in the class, our friendship dating from the time we were taking entrance examinations way back in 1907. **Erving M. Young** was also at the funeral."

—**Henry F. Dolliver**, Secretary, 10 Bellevue Road, Belmont 78, Mass.; **John A. Herlihy**, Assistant Secretary and Treasurer, 588 Riverside Avenue, Medford 55, Mass.

James M. Connolly, President of John Donnelly Sons, are the other two men to be honored. Milton is honorary life trustee of Beth Israel Hospital, a director of Children's Hospital, National Chairman Speaker's Bureau and member of the National Cabinet of the United Jewish Appeal. He is also a member of the executive committee of the Greater Boston Medical Foundation, president of the Associated Jewish Philanthropies Boston, 1947-1950, National Chairman, Brandeis University Associates, as well as trustee of Temple Israel, Boston. . . . **Max Levine**, who retired recently as director of the Laboratories Department of Health, at Hawaii, has sent me some very interesting clippings among them a resolution of the first Hawaii State legislature, expressing heartfelt recognition and appreciation of his contribution to humanity and wishing him a productive and happy retirement. He also received a citation by the American Association of Micro Biology, and an honorary degree of Doctor of Science from the University of Hawaii in 1960. Max is living at 348 Hind Drive, Honolulu 16, Hawaii, and would be pleased indeed to have any classmates visiting the Islands look him up.—**Frederick J. Shepard, Jr.**, Secretary, 31 Chestnut Street, Boston 8, Mass.; **John Noyes**, Assistant Secretary, 3326 Shore Crest Drive, Dallas 35, Texas.

## '13

We are on the "launching pad" and the "countdown" is 14. Yes, there are 14 months until 1913 goes into orbit at the 50th Reunion. . . . **Ralph L. Thomas** and his wife, returning from a vacation last summer in New Hampshire, detoured to West Chester, Pa., and had a delightful visit and dinner with Dorothy and **Bob Weeks**. Ralph reports that Bob takes things a little easy but except for a slight eye ailment is the same old Bob. Thomas, although he retired over seven years ago from the Baltimore Gas and Electric Company, keeps very active. He is the president of the board of managers of the Maryland Training School. Between his church, the Engineers Club of Baltimore, and work around their three-quarters of an acre, he manages to keep out of mischief. We expect to see you and your nice wife in 1963, Ralph. . . . **Doc Parsons** writes: "I am sorry to have missed the June meeting, but I am looking forward to the one in June, 1963. I hope we are all alive and can have a good turnout. If you ever get down this way be sure and give me a ring and drop by for a visit with us. With best regards from Polly and me and all good wishes." . . . **George A. Richter** types: "Nothing much new to report except that since I handed in my key at Eastman Kodak about four years ago I have been spending about half my time doing consulting work in the field of cellulose and cellulose products. Currently, I am spending much time working with **George R. Wallace**, who is chairman of the board and heavy owner in the Fitchburg Paper Company at Fitchburg, Mass. As you

## '11

The following details are from news clippings from the Portland, Ore., "Daily Reporter," the Springfield, Mass., "Union" and the Boston, Mass., "Record-American." **Ormond R. Bean**, VI, of Portland, Ore., has been very active in city and state services. He was graduated from the University of Oregon, and in 1911 received a degree in architecture from M.I.T. He was a practicing architect in Portland for many years and served on several city and state agencies in drafting housing, zoning and building codes. During World War II he served in the office of defense transportation in Hawaii, Puerto Rico and the Middle East. He was first elected to the City Council 29 years ago. He served six years and resigned in 1939 to become Oregon Public Service Utilities Commissioner. Since 1949 he has been Commissioner of Finance, and has filed for re-election this year. . . . **Chester L. Pepper, II**, of Melrose, Mass., was presented a certificate of life membership in the American Society of Safety Engineers at the meeting of the Boston Chapter in December, 1961, held at the M.I.T. Graduate House. General Chairman Carl Moberger, in making the presentation, said: "Mr. Pepper's counsel has been a guiding factor in the past, and we look forward for many years of association with him." . . . **John L. Bagg**, V, of Greenfield, Mass., died December 29, 1961, at Franklin County Public Hospital. He

## '12

Delayed word has just reached me that **James B. Little**, Box 106, Pine Bluff, N.C., passed away on March 7, 1961. No further details are available.

**Walter P. Green** has recently retired and is now living at 407 South East Bonita Court, Palm Bay, Fla. He and his wife will winter in Florida and go to Vermont for summers. As Walter's wife has a family living in Harwichport, Mass., they plan to come up for the reunion. . . . **Ralph F. Symonds** writes that while he is recovering slowly from his recent illness, he does not feel that he will be able to be with us at Harwichport. I know he would appreciate hearing from his old friends at his home 15 Pequot Road, Marblehead, Mass. . . . A letter from Dorothy **Hall** advises that after spending Thanksgiving in the Poconos, **Norwood** came down with what appeared to be a bad cold about the first of December. Not improving, a blood count was taken and it was found to be leukemia. After a few days in the hospital he passed away on December 16.

**Milton Kahn**, who has long been interested in public and Boston philanthropies, has been named as one of the three outstanding Massachusetts citizens who will be honored at the National Conference of Christians and Jews to be held on March 1. Ralph Lowell, who has been one of Boston's outstanding citizens, and

will remember, he is a classmate of ours, and although he did not finish he has done great things in both business and civic affairs. While at Tech he and I (at least we think so) were among the best banjo players in the class. He has promised to be present at the 50th, and I will hold him to it. My son, who went to Exeter, then Harvard and finally topped it off with M.I.T. where he took an M.S., is now located in Philadelphia where he is associated in a research capacity with Rohm and Haas; he has two children." More about George next month.

The Middletown, N. Y., Times Herald reports: "Olin B. Fellows, President of the Ideal Wrapping Machine Company of Middletown and Fair Play Carmels, Inc., Binghamton, died January 5, 1962, at the Horton Memorial Hospital, Middleton. He was 72. Mr. Fellows was born in Middletown on July 14, 1889. He was married in 1931 to Hilda Wilkes. He was a member of the First Presbyterian Church of Middletown, Hoffman Lodge 412, F & A.M.; the Excelsior Hook and Ladder Company; and the Middletown and Kiwanis Clubs. Fellows is survived by his wife; a son and daughter; a stepson and daughter; three sisters; and 12 grandchildren. To Olin's dear family we offer the heartfelt sympathy of the Class Of 1913. . . Again we are the bearers of sad news. To quote from a very fine letter from Mrs. Constance F. Rankin, "Ralph Smedberg Rankin, 69, died January 4, 1962, at Sarasota Memorial Hospital. He was a direct descendant of Admiral Charles Wilkes, a member of the Cruising Club of America since 1933, an active member in Sarasota community affairs—American Red Cross, United Appeal, Newtown Day Nursery and Old Folks Aid Home. He was a member of Saint Boniface Episcopal Church. He is survived by his wife, Constance F. Rankin; two daughters, Mrs. H. P. Skinner of New York and Mrs. W. E. York of North Carolina; and five grandchildren." Also received from Mrs. Rankin were two beautiful resolutions passed by the Red Cross and his former associates in the Newtown Society, with whom he worked over the past 10 years. We had expected to see Ralph at the 50th next June. We are very grateful to Mrs. Rankin and to his daughter, Mrs. Skinner, for furnishing so much information about Ralph's life, as well as the many tributes written after his death. We wish we could use all the material but mere words and tributes cannot express the feelings which all of us in 1913 have for our departed classmate and true friend.

Ellis W. Brewster again makes the headlines of the Boston Globe. On January 6, Bill was again elected president of the Pilgrim Society, which operates Pilgrim Hall, a museum and library of early Plymouth history. He was honored by a meeting and dinner attended by many prominent Plymouth residents, Plymouth descendants, and members of the Pilgrim Society. . . . We received a very interesting letter from Clarence W. Brett; he is now semi-retired and has given up his office in New York. He is still associated in his old business with his son, which arrangement gives him time for

leisure and travel. Brett and his delightful wife, Ruth, were leaving for the South, driving to Tampa, Fla., then over to Jackson, Miss., and back home by way of Montgomery, Ala. Clarence has given up most of his municipal work except the chairmanship of the Planning Board. He is no longer president of the Hackensack Y.M.C.A., just a member of the board of directors. So with a few other odd jobs he keeps out of mischief. Thanks Clarence for the good news of our friend Harvey Schribner, former superintendent of the Dedham schools, now holding a similar position in Brett's hometown. . . . Our ever efficient class agent, Larry Hart, is still giving his best to our class as well as to the Institute. If you have not given this year, why don't you send him a check today. We'll have more news in May.—George M. Capen, Secretary and Treasurer, 60 Everett Street, Canton, Mass.

## '14

Dr. Henry R. Aldrich was mentioned not long ago as having retired as secretary of the Geological Society of America in New York City. Following the custom of several of our retired classmates he has moved to a warmer climate in Santa Barbara, Calif. . . . Shepard Lee who has lived there for many years has quickly replied to your secretary saying that his retirement is euphemistically that of a financier living on his patrimony, doing nothing of which a '14er or he might be proud, except his tinkering hobby. He has made more than two million yoyo strings; he learned to make them in the Philippines when he was a Naval Reservist at sea. His letter about "Mancala" appeared in the March Review. Shep also has been working for many years with the Boy Scouts. In his note Shep asked after Alfred F. Nye. This is one of the unfortunate items of our Class News. Our class card states that he was with us for the first three years, but after that, the card was filed as inactive. Many of our classmates remember his athletic activities—he had been captain of the cross country team. On searching the records it was found that Alfred had died on May 14, 1945, and had lived all of his life at Fairhaven, Mass. He was graduated with the Class of 1915, was a member of Theta Chi, and had served in World War I as a first lieutenant of field artillery.

Another to join our retirement group is Dr. Robert V. Townend. "About two years ago, the General Chemical Division of the Allied Chemical Corporation made me a research consultant, with an assignment, among other things, of co-ordinating our chemical research projects carried out at other locations than Morristown. This involved considerable traveling and I saw quite a bit of the country from the air besides getting stranded occasionally due to inclement weather, etc. However, last December 31, the corporation retired me because of reaching the compulsory retirement age. At my retirement luncheon, I was presented with a beautiful 35 mm camera with a number of ac-

cessories which I am looking forward to using on the trip we are now planning. My Alaska pictures taken two years ago have been much in demand.

"We plan to continue to make our home here in Morristown but shall probably take several trips. I still interview high school students who apply for admission to the Institute from this area (it has been 25 years this year since I started) and recently was elected secretary of the local section of the American Chemical Society for 1962-3. There are also a number of projects around our place which I have in mind and I may do a little consulting later so expect to keep busy."

Thanks to the courtesy of Professor John B. Babcock, '10, now living in Portland, Maine, we have just seen a fine article in "The Constructor" on Welton A. Snow. Starting out with the Goodyear Tire and Rubber Company, principally in Los Angeles, and interrupted by two years, as captain of field artillery with action in France, Welton then decided to enter the construction business in Miami. Then came the crash of the early thirties. Instead of being defeated he became city manager of Miami. His work attracted so much attention that he was asked to become an executive of the Associate General Contractors of America in Washington. His work was again interrupted by three and-a-half years of war service in World War II. Now, just at the time when many of our classmates have retired, Snow has just moved up to special assistant to the executive director. Perhaps it is his slim, active body which gives him such energy.

Word has just been received of the death of Edward R. Goodwin, Jr. No additional information is available. Goodwin transferred from Worcester Polytechnic Institute to M.I.T. for his last two years. He was a member of Theta Delta Chi.—H. B. Richmond, Secretary, 100 Memorial Drive, Cambridge 42, Mass.; C. P. Fiske, President, Cold Spring Farm, Bath, Maine; H. A. Affel, Assistant Secretary and Class Agent, R.F.D. 2, Oakland, Maine.

## '15

What a Class! That old, dependable, reliable, indefatigable work horse committee of Larry and Bur set up another big, enjoyable and successful New York Class Dinner at the Chemists' Club on January 26. After a pleasant cocktail hour, the Pirate opened the dinner with a rousing "we are happy" cheer, followed by a hearty round of appreciation applause for Larry and Bur for their time, interest and effort in making this such a successful party. Following a delicious dinner practically the whole crowd gathered in our headquarters room upstairs for some post-prandial activities including some loud, if not exactly sweet, singing led by Speed Williams, Bur Swain, Archie and Henry Daley. The rest of the chorus lolling on the floor were undistinguishable. What fun! Present were, Phil Alger, Dick Bailey, Larry Bailey, Bill Brackett, Jerry Coldwell, Orton Camp, Alton Cook,

Henry Daley (Old Baldy), Sam Eisenberg, Morton Greitzer (guest of George Rooney), Larry Landers, Joe Livermore, Azel Mack, Hank Marion, Archie Morrison, Ben Neal, Stan Osborn (Ozzie), Gil Peakes, Wally Pike, Pirate Rooney and son Gerry, Louis Quirk, Bill Spencer, Vern Stewart, Bur Swain, Ray Walcott, Charlie Williams (Speed), Chris Wolfe. It was a pleasure to have George's guests—his son Gerry of the Marine Corps and Mort Greitzer from Philadelphia. Unfortunate last minute cancellations from Sam Berke, Wayne Bradley, Ralph Hart and Sol Schneider robbed us of their pleasant company. Better luck next year! The many fellows who sent regrets with regards to the gang certainly showed an outstanding interest and loyalty. I counted at least a dozen from Boston with Barbara Thomas and the following messages. From Florida, Art Bond, Otto Hilbert and Jim Tobey (suffering in the heat down there). From long cruises, Forrest Purinton and Ralph Waterman. **Hank Marion** called off a trip to Denver to see his grandchildren. Good **Herb Anderson** sent regards to the "Stalwarts." **Doug Baker** couldn't leave his family alone in Vermont's countryside winter. . . . **Sol Schneider** wrote later: "I am sorry I did not get to the Class Dinner in New York. This is the first time that I had missed the dinner since it has become an annual affair. I had planned to go, but, on Thursday afternoon my wife, Ann, went into the hospital. If all is well, we shall be in Boston during the summer and we shall certainly look you up." We all hope everything will turn out well for Sol. . . . Long distance prize winners were Orton Camp, Waterbury; Larry Quirk, Middletown; and Ozzie Osborn, Hartford, all from Connecticut; Bill Spencer, Baltimore; Phil Alger, Schenectady; and the 'Winnah' Ben Neal, Lockport (near Buffalo) N.Y. Better loyalty hath no man!

Although we promised no speeches, we did call on **Ben Neal** for a few of his stirring words on our 50th Fund. Have you sent him your contribution? After returning home **Larry Bailey** wrote: "I enjoyed the New York meeting very much and hope to attend again next year. Sorry Sol didn't show up. He came to South Duxbury once, and as usual Gladys and I were out on our regular afternoon ride. I hope to see him when I go to Philadelphia in April. Keep me advised re Boston meetings and I will try to attend. My regards to Frannie and any of the Boston boys I didn't see in New York. We are having a wonderful winter down here near the Cape. Almost no snow except for one light storm. All that has been washed away by rain." . . . A big middle, front page picture in the Beverly Evening Times, December 29, shows **Al Sampson** flanked by Henry Cabot Lodge and the president of a Beverly bank. It was a meeting of the Beverly (Mass.) Rotary Club and Al is its president. Nice going Al. . . . It's sad to record the passing of **Pellian T. C. Mar**, who died January 9, 1961, in Taipei, Taiwan, Formosa. He had been an admiral in the Nationalist Navy and had always kept his class interest. I enjoyed his letters and annual unusual Christmas card. His son Gilbert B. N. Mar, '52, is living

in Danville, Pa., with his wife and two sons and is an engineer with Kennedy Van Suan Corporation. The sympathy of the class goes out to the Pellian family.—**Azel W. Mack**, Secretary, 100 Memorial Drive, Cambridge 42, Mass.

## '16

Talk about pacesetters!! He has done it again. Every year about this time (February 5) he is just returning from another skiing vacation in Switzerland—not watching but doing!! Ask any member of the last class that had four years on Boylston Street and he will tell you who we mean—none other than our amazing President, **Ralph Fletcher**! And this year, not only Sibyl went along, but two of their young youngsters: Jack, 9, and Sam, 4. Late in January we had heard what was going on when we received a freezing-looking postcard carrying the official label "Luftseilbahn Diavolezza mit Berninagruppe," 3,000 meters (you know, 2.54 cm to the inch) above sea level. The message said they had skied "here on Tuesday, St. Moritz on Wednesday, and Davos the balance of three weeks." We are now very glad to present the current message from Ralph himself: "Just got back from Switzerland and I'm glad to report that we were able to get in some lovely skiing while there and surprisingly enough all managed to come home in one piece. Today I ordered a copy of "Four Turbulent Decades" written by our classmate **Wes Blank**, and am looking forward to reading it. We're getting to that time of the year when it becomes important to plug for attendance at the reunion, and I hope you'll permit me this opportunity to urge all again to make every effort to attend our 46th Reunion. It is to be held at the Chatham Bars Inn on Cape Cod this coming June 8, 9, and 10. We're confident that all who attend will surely enjoy themselves. Ladies are again invited and very welcome. We're hoping **Irv McDaniel** will have some interesting tales to tell us about his present trip around most of the world. May I also get in a plug for the Alumni Fund and the Second Century Fund, and urge that we do whatever we can to put these fund drives over the top? Remember that any contribution we now make will, if so requested, be credited to our 50-Year Gift. **Joe Barker** and **Bill Barrett** are working tirelessly and effectively in continuing to build this 50-Year Gift to a figure of which we can all be proud. We are in the home stretch and can finish 'big' if all of us can get in there and put forth the little extra drive which is necessary if we want to come out a winner. All best wishes, and see you in June!"

**Stew Rowlett** writes from the new home in Clearwater, Fla., (since January 1) that he and Helen are enjoying the process of refurbishing, etc., as they start their senior citizen era. He says that while he doesn't miss the commuting rat race, he will miss the chance to see some of the '16ers at the New York luncheons, the Thursday after the first Monday each month. He is already missing the fre-

quent visits to the art galleries, and he probably will miss many other things but, he adds clearly: "I can still make as good a martini as available in New York City, so I'll get along." . . . They won't leave Joe Barker alone and we'll know why. Last summer he thought the problems he was engaged in as a consultant to the Business Equipment Manufacturers Association had been solved. But then two staff members were hired away from BEMA and he had to take over full time. In addition to doing a two-man job he was assigned by the board to the Executive Search Committee to locate new personnel. Now with new personnel coming in soon, he expects relief but may have to continue full time until late spring. He says the data processing field is fantastic "with the development of new and newer generations of equipment. No sooner is one generation in production than an improved generation is developed—faster, bigger memory, random access, etc., etc." Last fall Joe and Mary had a 10-day trip to the West Coast primarily for a meeting of an advisory committee of the Research Corporation, his old company, in Yosemite. And in November Joe had a rush trip to London, to attend the International Electro-technical Committee on Computers—over on Sunday and back on Friday. That sort of trip he says is no fun but interesting since all foreign computer people were represented.

**Allen D. Petee** writes from Valencia, Venezuela, that he and his wife are still expatriates but expect this will be corrected in April, when they return to Tryon, N.C. Recently they flew 500 miles south to see Angel's Falls: 3,300 feet high, the highest in the world by far. "This was a regular Grand Canyon flight a la Cinerama I." Before he finishes his work on cable production, they expect to drive 400 miles west "to climb the Andes, by all means except by foot, and get used to snow again." He adds: "Some folks tell us that the U.S.A. will seem dull by comparison after two years here. We may be sitting on volcanoes at home, but in South America the steam escapes more often."

We have received the letter-of-the-year from Irv McDaniel, giving the most absorbing account of Egypt and the lower 700 miles of the Nile that we have ever had the pleasure of reading. We just can't do justice to his story here. To get the complete amazing account, come to the reunion in June and read it in detail (and perhaps see his pictures). Irv calls their trip up the Nile "the most wonderful experience of our lives." As an architect he saw things that undoubtedly most of us would have missed. Starting with prehistoric man in this valley from 10,000 to 5,000 B.C., they saw relics and remains in the museums, then went on to Memphis, near Cairo, to see King Djoser's Step Pyramid (2950 B.C.), "the oldest stone structure known to man." Next to it is the tomb of his daughter, "with fluted stone columns, the predecessor of the Ionic order by more than 2,000 years. Their tombs and mastabas with their painted and sculptured reliefs are grand beyond description." After the Pyramids, they "took a night train to Luxor, arriving at 7 A.M. just as the morning sun

was striking the most massive of all temples—the Temple of Karnak. You can't describe Karnak. You have to see it to appreciate its enormous size. One small part of it, the Great Hypostyle Hall, you could put the entire Notre Dame Cathedral (Paris) inside its walls. It was started by Thutmose I (1545 B.C.) and each era added to it until 200 B.C. There are pylons and pylons, courts, halls, ruined areas, obelisks, colonnades, etc., etc. The Great Hypostyle Hall should have been one of the Seven Wonders of the World. It has 134 massive monolithic columns 78-feet high. Then there is an obelisk over 100-feet high and weighing 200 tons. We saw the quarries where it had been mined, hundreds of miles up the Nile above Assuan, high up in the hills down to the raging torrents of the First Cataract. This seems impossible today, even in this Atomic Age. It took them only seven months to quarry this massive stone, carve it all over with inscriptions and drawings, get it down to the river, float it a few hundred miles down the Nile, get it ashore and then erect it. They erected it by shrinking wet ropes—very tricky. The rest of the details will have to wait until you see our pictures." For the moment we are going to pass over Irv's account of "the day of days" when they went over to the West Bank to the Valley of Kings and visited King Tut's and other tombs, and touch on something that seemed very close to Irv's heart. "The climax of the trip, the Great Rock Temple of Abu Simbel," he says, is one of the most stupendous monuments man has ever built. "Many scientists rate it ahead of the pyramids. I don't know which created in me the most reverent awe. Abu Simbel was never included by Herodotus in his Seven Wonders because he never went that far up the Nile and he included only such structures as he had actually seen. I marvel at the imagination of those who dared start this project. But most of all I marvel that any one age could produce such marvelous artists, engineers, and artificers. You know all its details, how it was cut out of solid rock, its size, its decorations, and the historical importance of the reliefs and carvings. The new dam will completely flood this building. There are several crackpot ideas as to how to save the monument for posterity." Irv points out that for one scheme dreamt up by a 'youth' and currently favored, the U.S.A. would be "privileged to put up the money" but not to control the funds. Irv recommends strongly that we urge our congressmen to watch carefully over this manner of "giving" money. He says what he wants in this case is "a realistic, detailed program worked out and approved by an unbiased group of our own engineers (not scientists); also, that we make our own estimates and control all money. Then I might consider the proposition, but I think I would be most hesitant." Later, we hope to give more of what Irv calls the "thrills that come once in a lifetime."

Travelwise, the **Dave Pattens** have been keeping busy. In late August, they motored about 1,500 miles to New Brunswick, Nova Scotia and return, and the fall foliage twice lured them to the New

Hampshire-Vermont area. Just before Thanksgiving, Dave flew to Detroit on business, then went to Washington, D.C., for a week which included the holiday with his stepson, Major Kendall Russell (now at the Pentagon) and family. He notes that the **Don Websters** were heading south for the months of February and March. . . . **Jack Hickey** continues active in his own packing house brokerage business in Boston. He notes that he was in the meat packing business with his father up to the start of World War II when he was selected by the War Food Board to head up the procurement of meat for all the Armed Forces in the eastern part of the United States as well as all ships afloat from Eastern ports. He left the government in 1945 when he started his own business. Jack says he has a family of eight children, five boys and three girls, all married, and all graduated from college. One son, Edward, is M.I.T., '53, and is in heat transfer work at Tech. Jack planned to visit Dorado Beach in Puerto Rico in late February, but we could not supply him with the names of any '66ers there for him to contact. . . . **Howard Claussen** forwarded a January 11 clipping from the Cape Cod Standard Times, noting that Mr. and Mrs. **Emory Kemp** of Baker Avenue, Wellfleet, "have closed and sold their home and will depart for Sarasota, Fla., for permanent residence." For the past two years or so, the Emory Kemps have been spending some of the cold winter months in Sarasota, and were undoubtedly looking for the site where their new home is now (February) being built in Sarasota Springs. We sometime wonder, just a little bit, whether they may miss our snow and wintry gales enough down there so that they may wish to spend a few weeks each winter, say starting in 1963, way up here on the Cape, just to keep in touch with the invigorating breezes that Emory used to extol way out in Wellfleet.

Your Secretary had dinner with **Bob** and Pearl **Wilson** at the sumptuous Westchester Apartments where they live in Washington, D.C., on January 15. Bob, as A.E.C. Commissioner, keeps very busy and continues to refuse many more speaking engagements than he accepts. We got from him a photograph for our 46th Reunion bulletin board, showing Bob, and who else do you think? None other than **Blythe Stason**! It is a picture taken in Japan and might be labelled "Wilson and Stason go Japanese on the 20th anniversary of Pearl Harbor." As most of us know, Blythe, as retired Dean of the Law School of the University of Michigan, is an expert in atomic international law. In the picture it looks as though Bob and Blythe were sitting on chairs at a table, but actually it was cushions on the floor, with little back rests provided for some of the "old men." It was in a teahouse in Kyoto, and as Bob says "the 'girls' are the supposedly-glamorous Geishas." And by the way, we discovered a color-photography artist in our midst—Pearl Wilson—and have urged her to bring to the 46th two of her many albums of really exceptional prints of scenes that she has taken during their travels. . . . **Gordon Fair** retired in February from the office of mas-

ter of Dunster House of Harvard College and was honored by students and colleagues at a farewell dinner on January 10. According to a news release: "Professor Fair, who led the educational and extracurricular activities of the 350 student residents of Dunster House for more than a decade, will continue his teaching and research as Gordon McKay Professor of Sanitary Engineering. . . . During more than 40 years as a member of the Harvard faculty, he has taken a leading part in the development of sanitary engineering throughout the world." He was a native of the Union of South Africa and was graduated simultaneously from Harvard and M.I.T. in 1916. He became an "instructor at Harvard in 1918 and was named Gordon McKay Professor of Sanitary Engineering in 1935 and Abbott and James Lawrence Professor of Engineering in 1938. He served as Dean of the Graduate School of Engineering from 1946 to 1949. . . . In 1957, Professor Fair won the Western Hemisphere Award of the United States Section of the Inter-American Association of Sanitary Engineering."

**Paul Page Austin** writes from San Francisco that he's still with Rogers Engineering Company, Inc. and has no intention of retiring. He has no immediate prospect of going to the Far East, but there is always the possibility. His company is opening an office in Hong Kong to be used as a base for solicitation of prospective jobs in Pakistan, Malaya, Thailand, and Japan. He himself was in Thailand for a long stay. Many well remember excerpts of fine letters received from him when he was there. He says he sees **Dick Fellows** every now and then, that Dick lives in Kelseyville, is retired, but is kept fairly busy acting as an expert witness in damage suits against electric power companies.

We regret to report the sudden death of **Bill Liddell** in Arlington, Va., on February 8. Just three weeks earlier we had a long telephone chat with him while in Washington, and only days earlier, on January 30, we had a fine newsy letter from him. What follows was pretty much written for the column before the sad news came. Bill was in his 24th year with the Federal Power Commission in Washington. This with time in the Army in World War I, plus time with the National Resources Board, had made him "a 25-year veteran on the government payrolls." He wrote that "these 26 years working for Uncle Sam and the 20 years I worked for Uncle Horace (at Tech) constitute 'my life' since graduation." In 1956 he and his wife (whom we of Lowell High School remember as Elizabeth Woodworth) had a rather hurried loop of 22,000 miles around the Pacific, when their daughter was engaged in Girl Scout work and had been made supervisor of troops in Okinawa and Formosa. The 'troops' were the daughters of the American soldiers stationed on these islands. The trip was occasioned by the Okinawa wedding of their daughter to a civilian who was working in a branch bank in Okinawa. The travels included some time in Tokyo, Okinawa, Taipei, and Hong Kong. They subsequently wished that their quick planning had allowed more time in the Pacific. Okinawa

he called "a beautiful spot, sometimes referred to by the military as the 'Country Club of the Pacific' and a much sought-after assignment." They got away from Okinawa "on a dark windy, rainy morning just as a typhoon hit the island, and just escaped a protracted delay until the typhoon was on its way to Japan." Their three children, all married (a total of 11 grandchildren), live in New England; the older son in Hamden, Conn.; the younger son in Needham (Bill noted: "he works in Boston where he is executive director of United South-End Settlements, which for me would be a fearsome job but one he thrives on"); and a daughter in South Sudbury. With a 45th at Radcliffe coming in June, we had hoped to see the Liddells at our 46th in Chatham.

The old birthdays keep ticking on, as we were pleasantly reminded by a card from the **Joel Connollys**, now of Iowa City, Iowa, instead of Taiwan. Joel notes that close friends of theirs in Taipei have recently moved to Mountain Lakes, N.J. and that the non-distaff side of the family has the same birthday as we have. As we recall, Joel was the last of the '16ers to reach 65 and that happened only last year in February. . . . **Barney Gordon** takes time out to answer our call for news. Says that "perhaps one of the nicest things" that has happened to him recently was his appointment as a fellow at Brandeis University in Waltham. He was among the founders of the University and has taken great pride in its development and progress. In the line of business, he had the pleasure at the turn of the year, of accepting an award from the Schiffler Lace and Embroidery Institute for his company's Darlene swimsuit design. . . . **Elizabeth Patee** says she is semi-retired but is still associate professor of landscape architecture at the Rhode Island School of Design, and carries on a minimum of private practice. She mentions recognizing only **Steve Brophy** (also Course IV) at last June's Alumni luncheon in Cambridge. She spends summers in Maine, and last summer had "several delightful days with Charlotte (Phelps) Dodge and Parker Dodge, '07. They have built a new house in Brooklin, Maine, on a beautiful rocky site in the same summer community where they have summered since they were married." Elizabeth plans to attend a Congress of the International Landscape Architects to be held in Israel in July. She says: "As there is extraordinary work being done, it will be sure to be an interesting meeting. These congresses are held biennially and I have attended a number of them: in Stockholm, Zurich, Vienna, and Amsterdam, where we have enjoyed unusual opportunities to see the work being done in planning, housing, park and recreation work, etc."

Before closing the column, we wish to note that at the February 8 monthly class meeting in New York (at the M.I.T. Club of New York rooms, Hotel Biltmore; the Thursday following the first Monday of each month) we joined and, for once, outnumbered 1917 by a score of five to three. Those present included: Joe Barker, who continues very active with BEMA and handles large scale problems as a

warden of Trinity Church in lower Manhattan; **Walt Binger**, with his continued amazing activities on horseback and his explanations based on experience of just how foxy foxes can be on a hunt; **Charlie McCarthy**, and his continued interest since retirement in things involving aviation and management; **Peb Stone**, and his delicious plans for several weeks of warm sunshine in the Caribbean starting in February; and your secretary. The '17ers included Dick Loengard, who with Walt Binger recounted life long memories of life in New York City; Joe Littlefield, who stays so busy he hasn't taken any teaching job in Florida yet, and A. R. Morton, technical consultant and a regular at the luncheons. Now, finally, in closing, please remember what Ralph Fletcher has said at the opening of this month's column about the 46th Reunion in June, and mark the dates on your calendar—June 8, 9, 10—for another fine get together. To keep the old column full, write a little and write often to let us know what you are doing, where you've been, and any other bits of information.—**Harold F. Dodge**, Secretary, 96 Briarcliff Road, Mountain Lakes, N.J.

## '17

Our honorable secretary and his good wife have left for several months in Florida asking the less honorable assistant secretary to take over. The suspicion is that **Win**, the Scot, learned that Reunion Golf Chairman **Ray Blanchard** was going to have a dozen or so golf balls as a prize so Win thought he'd maintain an edge by golfing in Florida. . . . Can it be that Treasurer **Loosh Hill** is laying out a computer tape for our edification? His \$15 reunion registration acknowledgment form with its x over y, plus or minus 15 raises a question. He is ready to accept more reunion checks. . . . As this is written in February any reunion comment will be rather old stuff by the time it is read, for meanwhile there will be reunion mailings. The fact is though that with 69 men with 55 wives indicating their intention to come and paying their \$15 fee, we are going to have a fine, big reunion. Snow Inn on the Cape is an ideal location. Even April is not too late to decide to come. Why not?

People from Maine to California (actually) have written that "Wellfleet Couple" who sent a "President Grant Desk to the White House" as a result of the widespread news story about none other than our **Heine** and **Elizabeth Gartner**. Her family had had the desk which had been thoroughly authenticated. After it was offered to Mrs. Kennedy, her commission checked carefully and finally accepted the gift with thanks and a nice letter. The Gartners keep happily busy at their attractive home and Barncrafter's Shop where they restore old furniture. They are about 15 miles from our reunion site and Heine is our Snow Inn liaison man.

Latest Alumni Fund figures show us running behind last year but not much. Even with the S.C.F. on we do want to

maintain the essential activities of the Alumni Fund. So if you have not sent your contribution it would be good to have it now. . . . A Canadian news story tells of the extensive activity of Dr. **Victor Dolmage** in western Canada's geology during most of the past 50 years. He is a partner in the consulting firm of Dolmage, Mason and Stewart, Ltd., Vancouver, B. C. . . . **Frank E. McKone** is tied up with renovations to the Canajoharie Motor Hotel at Exit 29 on the New York Thruway so doubts that he will be able to attend our 45th. He has had 50ths at Dartmouth and the University of New Hampshire and hopes to make our 50th. . . . **Enos Curtin** has returned from one of his semi-annual trips abroad. His traveling may now be curtailed some because of his responsibilities for Graham-Paige and their great, new New York Garden Complex to be built on the site of the present Pennsylvania Station. . . . **Ralph H. Ross** is another so-called retired man who sounds more than busy. In his retirement he finds time at Danville, Vt., to be president of the board of trustees of Brightlook Hospital in St. Johnsbury, chairman of the legislative committee of the Vermont Hospital Association while the Vermont General Assembly is in session, a director of the New Hampshire-Vermont Blue Cross, a trustee of St. Johnsbury Academy, chairman of the business committee of the North Congregational Church, St. Johnsbury, and a member of the Board of School Directors, Danville. Family-wise he appears still to be the class champion grandfather with 21 grandchildren and raises the question as to whether 1917 has a great-grandfather. Have we? He has "satisfied the rapacious demands of Loosh Hill and has an acknowledgment of his reservation at Snow Inn" for our 45th.

We regret to announce the death of two of our classmates. **Walter Harrington**, XI, died February 5 in San Francisco; he had moved to Sausalito, Calif., after his retirement from Vocational Guidance, Inc., of which he was president. . . . Captain **William C. Mahaffey** ("Potts") died in his home in Chambersburg, Pa. Captain Mahaffey was former executive officer of the David Taylor Model Basin.

Some 'quickies'! **Jack Coffin** has retired as president of Jackson and Moreland, Inc. but continues as director and consultant. . . . **Dad Wenzell** is back from a recent four weeks' trip to Buenos Aires for the International Bank for Reconstruction and Development. . . . **Dix Proctor** and Vi are off on another trip, this time to the Greek Isles. Before leaving he reported attendance at the January 4 luncheon at the M.I.T. Club of New York of Messrs. Lunn, Loengard, Neuberger, Aldrin, Morton, Joseph Littlefield and Proctor. At the luncheon meeting in January of the M.I.T. Club of Boston there were Messrs. Swain, Dunham, Coffin, Allison Williams and Dunning. . . . **Bill Eddy** recently took a 12-day business trip around the world for Metcalf and Eddy. Seen at the Skating Club of Boston, **Ray Stevens** and **Stan Dunning** doing edges but no spins. Stan is receiving congratulations on his engagement to Mrs. Jeannette Roberts Dales of Washington,

D. C., in a storybook romance. She was his junior prom girl, but they had not seen each other for these past 40 years. She is the mother of two sons and has six grandchildren. A March wedding was planned, and they will be at the reunion. Late word from **Win McNeill** tells of driving icy roads as far south as South Carolina and an ice storm in Jacksonville. He has arrived in Sarasota for a stay and has met **Vincent Panettiere** with whom he expects to go fishing. Per request he gives us this story of the bus rider who said, "Madam, will you please get off my foot?" to which she replied, "Put your foot where it belongs." and he replied, "Don't tempt me, madam, don't tempt me." —  
**Stanley C. Dunning**, Assistant Secretary, 1572 Massachusetts Avenue, Cambridge 38, Mass.; **W. I. McNeill**, Secretary, 107 Wood Pond Road, West Hartford 7, Conn.

## '18

No man's life is worth more than the causes he devotes it to and risks it on. Some only grub shamelessly for money. Some fight insecurity and exasperation because they have no power of purpose. Some try to rethink fundamentals with changing times and to alter traditional ways in significant directions which somehow free men from ignorance or reduce their bondage. Some make history while others merely scurry about. Surely no one in our entire class has done this by seeking new answers in the places where they can be found to the extent achieved by **Bill Foster**. He was among the first to recognize the importance of stainless steel, and profited well from the realization. Following the Second World War he served humanity as under secretary of commerce. Then he held office on various levels, finally becoming top man in the office of U. S. Economic Cooperation Administration. Bill was the deputy secretary of defense. Now, he is director of the United States Arms Control and Disarmament Agency, an office created by President Kennedy. What makes possible the inclusion here of his sunlit comment on this important effort is Bill's kindness. As the German proverb says, "Die kleine Dinge ist die grosse Dinge." The little thing of his taking the time, amid urgent responsibilities of world-wide importance, to express a word of appreciation for something which amused him, shows the great soaring excellence of his humanity. "The arrival of the February issue of The Review reminds me that I meant to write you after receipt of the January number, and to tell you what a good laugh Beulah and I had on reading the class notes of that issue. The Hartford Times must have a better filing system than ours in order to dig up the fact, almost 37 years later, that there was a small wedding in Hartford with some 200 guests at the home of the Robinson's. Purpose: to marry off their daughter, Beulah. It is a better total recall than we could achieve, at least without the written word. The new job covers one of the

most complex and difficult assignments yet conceived, even without counting the difficulties of attempting to determine what is in the mind of the Soviet leaders with reference to arms control and disarmament. Our research and plans cover the political, psychological, military, scientific, informational and other assorted skills, but we are putting together a first-class team and are hopeful that we will be able to make some real progress toward reducing the threat of the destruction of the world in a general thermonuclear war. I have several very good Tech men associated with me in the Agency and also have the pleasure of working a good deal with Jerry Wiesner, the Science Adviser to the President. I look forward each month to reading the news of our classmates and am appreciative of the time and trouble you take each month to put the notes together."

**Sherman A. MacGregor** certainly changed his fundamentals rather completely after doing a thesis with the imposing title of "A Project for the Elimination of the Grade Crossings in Union Square, Rockland, Mass." For one thing, he pruned the "y" from MacGregory, leaving a neater, sweeter name. For another, he had learned from the Tech Show that footlights and dramatic encounters appealed to him more than civil engineering. In a nice communication from 11285 Fifty-first Ave. North, St. Petersburg 8, Florida, he says, "I am enjoying life just as much as ever, if not more so. To recapitulate briefly—After being a radio director for over 20 years (and very successfully too), radio went to pieces. So I shifted over and became fulltime what I had been doing off and on part-time for several years—an actor. Stage, radio, television and movies kept me busy until 1959, when I got the bright idea of buying a radio station as a means of growing old gracefully and still actively. But that was, for me, a mistake in execution, if not in essence. I bought one in the Midwest, ran it for over two years as a losing proposition, and finally sold it last May. In spite of the fact that the preliminary investigation was very thorough before settling on the station we wanted to buy, the results were unhappy indeed. My partner was my son-in-law, who is professionally a radio station manager, and a good one; but between us we couldn't make it work out. Looking back on it, it seems that we bought the wrong station, in the wrong town, and at the wrong time. But whatever it was, we got rid of a headache when we sold it. And that was the signal to do what I have been planning to do for many years—move to Florida and away from ice, snow and cold weather in general. (What we've been missing this year in that respect!) So my wife and I came down here, bought a small but very charming house, and settled down to enjoy life. I have room for my garden, although gardening here is completely different from Long Island. I haven't been nearer to a shuffleboard court than to walk across it, but I haven't had time to miss it. Between fishing (at which I have little luck) and boating (at which I am good) and gardening (at which I am still so-so) and swimming (when the water

is warmer than it is just now) and sleeping (and am I good at that!) I find the days and the months pass with unusual rapidity. I think the big thing that I like about living a life of retirement is that if I don't feel like doing something today, I don't do it. If I want to take a snooze, I take it. Time means nothing. Today, tomorrow, or next day—it's all the same. And if that sounds lazy and shiftless, I assure you that at this time in my life I don't care. I don't feel either one. I feel merely easy going, and happy to take things as they come. The temperature today is about 42 degrees with a dirty northeast wind, so you are favored by getting this brief diary from me. It's much more comfortable in here than it is outside. But the weatherman promises it will be 65 before the day is over. That's what I like about Florida—it may be chilly in the early morning, but it usually warms up in the afternoon."

A few miscellaneous items about the brethren indicate the individual causes to which they devote and risk the efforts of their lives. **Phil Dinkins**, who showed a penchant in college for managing things, has recently been elected to the board of the Worthington Corporation. Until the first of this year he was president and chief executive officer of the General Animal and Film Corporation. Prior to that, he was president and a director of the Jefferson Chemical Company, following a long association with the American Cyanamid and Chemical Corporation (and its predecessors) which goes back to 1923. . . . Culminating 20 years of government service, in trying to rethink fundamentals, **Wendell H. Kayser**, deputy Director of Development, Fort Detrick, Md., was honored at a reception and dinner held in the Officers' Mess. Brigadier General F. J. Delmore, commanding officer of the U. S. Army Chemical Corps Research and Development Command, presented Kayser with the Department of the Army Certificate of Achievement in recognition of exceptional civilian service. In words charged with awesome implications, it reads: "Mr. Kayser, during the period from 1946 to 1961, demonstrated an exceptional depth of perception into the needs of the research and development program in biological weapons. Time has, in each instance, shown him to be correct in his vision. Perhaps more than any other individual, he formulated the boundaries which define the capabilities of biological weapons as we understand them today." Born in San Diego, Calif., Wendell attended the University of California, Berkeley, for his freshman year, transferring to M.I.T. where he received an S.B. in mechanical engineering. Upon graduation he worked for one year as a machine designer for the U.S. Government engineering service. Then he worked for industry but re-entered government service in 1941 as a mechanical engineer in the Office of Chief, Chemical Warfare Service. In 1942, he received a direct commission as major in the Chemical Warfare Service and during World War II served as Chief, Offensive Material Branch, Chemical Warfare Center, Edgewood Arsenal, Md., until he was discharged in 1946 as a lieutenant colonel. He continued as a civilian in the same work until he transferred to Fort De-

trick in 1950. There he served as a mechanical engineer in what was then the Biological Department, Munitions Division. He retired from the reserves several years ago as full colonel. Full of satisfaction and earthy wisdom, Kayser and his wife, Lidie, have returned to California and will reside in San Diego. . . . **Arthur E. Quimby** started out to be an architect, but left to serve in World War I. Before that international argument was over, the architectural dreams matured to law, and we lost him. He has now retired from the conflicts between automobile drivers he knew as counsel for the Liberty Mutual Insurance Company, and has joined a Pittsfield Mass., law firm.

Letters and clippings continue to come in adding dignity and affection to the causes for which **Bill Wills** devoted his energies. **John Kilduff** telephoned to say he had been asked to represent the class at the funeral. Marguerite invited him to accompany the family to her home afterward. As expected, she was magnificently brave and considerately kind. A note from E. B. Rowe, '06, expressed admiration for Bill's devotion to M.I.T. **Ted Wright** had this to say, "It was with a heavy heart that I read in The New York Times yesterday of the passing of Bill Wills. I had a very close relationship with him during our school years as we were both in the Department of Architecture. Bill was in Option I and I in Option II, Architectural Engineering. We will all miss Bill's little sketches appearing from time to time in M.I.T. publications, and we will miss him in many other ways. You might be interested in knowing that I have recently had published in three volumes my articles and addresses written or delivered during the past 44 years of my association with several aviation activities and with Cornell University. I have sent a copy to the M.I.T. Library." . . . **Maurice A. Reidy**, one of our distinguished civil engineers, has done his last rethinking of fundamentals and made his last contribution to changing ways. He died in November at age 72. He was president of Maurice A. Reidy Associates, Consulting Engineers of Boston. This firm designed the Calvin Coolidge Memorial Bridge across the Connecticut River at Northampton. It also designed the Jordan Marsh store, St. Anthony's Shrine on Arch Street, the new Liberty Mutual building, the Archives Building of the State House, and the Southeast Expressway. It designed replacements for more than 600 highway bridges destroyed in the 1938 hurricane, and recently was engaged in planning the Don Orione Madonna Shrine in East Boston. Reidy leaves his wife, three sons, three daughters and 28 grandchildren.—**F. Alexander Magoun**, Secretary, Jaffrey Center, N.H.

## '19

Evelyn and **Bernard S. Coleman** had an interesting and entertaining trip to the Orient last fall. They spent a few days in Honolulu, a couple of weeks in Japan, then on to Hong Kong (where they had Thanksgiving Dinner aboard the U.S.S.

Yorktown, Aircraft Carrier) then Thailand, Singapore, Australia, Fiji and Tahiti. . . . **John O. Merrill** is now retired, living in Colorado Springs, Colo. Just prior to his retirement, he was a general partner of Skidmore, Owings and Merrill Company, which built the U. S. Air Force Academy buildings. . . . **Ervin M. Kenison** is still working with the Federal Power Commission in Washington, D. C. He has moved, however, and his new address is 13412 Grenoble Drive, Rockville, Md. . . . **George C. McCarren** is in Cleveland. The **Everett Dotens** visited him and his wife last fall. Ev has retired from Chrysler, and is working for a die cutting print shop.—**Eugene R. Smoley**, Secretary, 30 School Lane, Scarsdale, N. Y.

## '20

**George A. Wilson**, who has been principal of the Quincy, Mass., High School for more than 15 years and a member of the Quincy school system for 41 years, is slated for retirement in June. George lives at 38 Worthington Circle, Braintree. He was married in 1920 and has two children. . . . **Henry H. Blau**, who received his M.S. in physical chemistry at M.I.T. in 1920, is professor of glass technology at Ohio State University. He recently received the 1962 Toledo Glass and Ceramic Award from the Northwestern Ohio Section of the American Ceramic Society. The award is for outstanding work both in industry and as an educator. He holds 31 U.S. patents and many foreign patents and is the author of more than 20 publications. Participating in a symposium at the meeting when Dr. Blau got the award was Dr. Henry H. Blau, Jr., also an expert on glass and associated with M.I.T. . . . **Charlie Klingler** is back in Milwaukee after a sojourn in Fort Lauderdale, his present address being 1745 West Dean Road, Milwaukee 17, Wis. . . . No doubt some of you saw, and I wish all of you could have seen, the picture of **Art Radasch** in the New York Times recently. Art was shown carrying a 47-inch silver mace designed at London's Royal College of Art and destined to be a new emblem of office for the president of Cooper Union, the position formerly held for so long by our own **Ed Burdell** who is now in Ankara. As senior professor of the faculty, Art is privileged to carry the mace at academic ceremonies. In the news picture the mace was impressive but no more so than the distinguished individual who carried it on his shoulder. . . . What's new, fellows? Your classmates would certainly like to hear where you are and what, if anything, you are doing. Write me, will you?—**Harold Bugbee**, Secretary, 7 Dartmouth Street, Winchester, Mass.

## '21

The annual notice from the M.I.T. Club of Mexico announces the 14th in their series of All-Technology Fiestas,

held last month. **Manuel Sandoval Vallarta** and **Viviano Valdés** were among the counselors for the gala event. This will bring back happy memories of our own interim Class of 1921 Reunion held at the Club's 1960 Fiesta. Anybody for a repeat trip to Mexico City? An internationally famous physicist, Val Vallarta has received many honors and much recognition, particularly for his work in cosmic rays and nuclear physics. He received his latest award, "El Premio Nacional de Ciencias," from the president of Mexico at a formal gathering of notables in science and the arts. Val is professor of physics at the Universidad Nacional Autonoma de Mexico and has been assistant secretary of education of the Republic of Mexico. . . . **Dr. Williston Wirt**, under whose ministrations the Ewa Community Church grew from a quonset hut to a beautiful edifice, has resigned his pastorate which serves Pearl Harbor, Hawaii, and has returned to the mainland where his retirement address is 101 North Sixth Street, San Jose 12, Calif. . . . **James L. Entwistle**, President and founder of Enjaco Corporation, electrical specialty manufacturers of Cranston, R.I., reports his new home address is Beaver Lodge, Route 9, Crawford, Maine. Is this retirement, Jim? . . . **Eugene W. Rudow**, President of Scientific Supplies Company of Seattle, Wash., says his home mailing address is P.O. Box 451, Mercer Island, Wash., and we wonder if this may also mean retirement. . . . **Alan L. Morse** advises that he still lives in Indianapolis, Ind., where he can now be reached at 3337 Pinecrest Road.

**Lawrence Castonguay** has retired as design engineer after 36 years with Pratt and Whitney Aircraft Company, East Hartford, Conn. **Ray St. Laurent** sent us a clipping describing the silver anniversary celebration arranged by the three Castonguay children. Larry and Gertrude live in Manchester, Conn., where he is active in the Knights of Columbus. . . . Officials of the Merrimack-Essex Electric Company, Salem, Mass., arranged a testimonial dinner to mark the retirement of **Edward S. Brown** after 30 years of service, most recently as assistant district sales manager. During World War II, he served with the U.S. Navy. Ed and Leslie make their home in Danvers, Mass. They have one daughter, Mrs. Leo Jensen of Pullman, Wash., and three grandchildren. . . . **Arthur E. Raymond**, who retired some time ago as vice-president in charge of engineering of Douglas Aircraft Company, is reported to be serving as a consultant for American Airlines. . . . **Rufe Shaw** caught the attention of the alert clipping service for the views he expressed in a letter to the editor of the Philadelphia Inquirer on the value of having to study Latin, Greek and classical literature and the rebuttal which the paper received from another reader. . . . As we write these notes, the syndicated "Their Birthday" column of today's newspaper lists **Joseph L. Gillson**, geologist, born in Evanston, Ill." Here's how, Joe; we celebrate the day together! . . . Seen at the midwinter meeting of the M.I.T. Club of Northern New Jersey: Joe Wenick, Sumner Hayward, Cac Clarke.

A recent letter from Joe says: "Thought you would like to know that I attended a meeting of the Alumni Council at the Faculty Club on January 29. I met George Chutter, Josh Crosby and Mich Bawden who send their regards to everyone. There is something about these trips that makes me feel that 'I wish that I were back again . . .' Hope to attend another meeting in March. Best regards."

**Chick Kurth** wins this month's sweepstakes for the best newspaper and magazine publicity. Perhaps you opened the Wall Street Journal or Electrical World and found full page pictures, including the smiling vice-president of Boston Edison's steam and electric operations, exulting in anticipation of the forthcoming addition of another 340,000 kilowatts to the generating capacity of our favorite old stamping grounds, the L Street Station. . . . **Saul Silverstein**'s trip notes from Bangkok include: "Sorry our classmate, **Prince Mahidol Songkla**, passed away before we could have local reunion." Maybe you have forgotten that the prince, whom we shared with a school down Massachusetts Avenue, became king of Siam before his untimely death. Saul also reports from Honolulu: "Contacted **Harry P. Field**, who brought us orchids from his own garden. Catherine couldn't make it; she was running a Christmas 'hotel' for their family some 40 miles away at their regular and beach homes on the other side of Honolulu. Spent a pleasant three hours reliving the past with Harry." We note that next month marks the 10th anniversary of Saul's Volume I, Number 1, inaugural reportorial effort, a mere four-page document, prepared en route to his first management seminar in Belgium.

Participation of the Class of 1921 in alumni affairs continues at the usual high level as attested by the activities of the following, who are listed here as they appear in the annual directory of the Alumni Association: Member at Large on the Alumni Council, **Joe Wenick**; Class Representative on the Council, **Chick Kurth**; Representatives of M.I.T. Alumni Clubs: **Mich Bawden** for the Cleveland Club; **George Chutter**, Northern New Jersey; **Josh Crosby**, Bangor; **Frank Kittredge**, Monterrey; **Ace Rood**, Indianapolis. **A. T. Eric Smith** is a director of the M.I.T. Canadian Trust Fund. Your class officers, elected at the 40th Reunion last June, were listed in the November issue of The Review. Selected to serve on M.I.T. Departmental Visiting Committees are: **John G. Lee**, Course II; **Fred Adams**, Course V; **Andy McKee**, Course XIII. Among the officers of alumni clubs are: **Charlie Manneback**, President of the M.I.T. Club of Belgium; **Wally Adams**, Secretary-Treasurer, M.I.T. Club of the Miami Valley; **Joe Wenick**, Treasurer, M.I.T. Club of Northern New Jersey; **Palmer Scott**, President, and **Tom Card**, Vice-president, the Technology Club of New Bedford. Honorary secretaries and educational counselors of the Educational Council of the Institute include: **Sam Lunden**, California; **Ray St. Laurent**, Connecticut; **Ed Farrand**, Georgia; **Harry Field**, Hawaii; **Cec Clarke**, Sumner Hayward and **Joe Wenick**, New Jersey; **Irv**

Jakobson and **George Welch**, New York; **Ray Snow**, North Carolina; **Wally Adams**, Ohio; **Si Freese**, Texas; **Gene Rudow**, Washington; **George Pollock**, Wisconsin. **Warrie Norton** is a former president of the Alumni Association.

It is with deep sorrow that we record the passing of two classmates and express sincere condolence to their families. **Sydney Smith Winslow** died on October 29, 1961, in San Bernardino, Calif. A native of Fall River, Mass., he had retired in 1946 as a colonel, USAF, after 38 years of service. A graduate of Brown, he received his master's degree with us in Course VI. He had been a deck officer in the U.S. Coast and Geodetic Survey and also served at one time as port superintendent of New York. He was a 50-year member of the King Philip Masonic Lodge and a member of the Retired Officers Association. He leaves his wife, Mary; a son, John D. of New York; a daughter, Mrs. Mary W. Kemper of California and a grandson. . . . **Maurice Gérin** died at Outremont, Quebec, on January 15, 1962. Born in Coaticook, Quebec, he attended College Mont-Saint Louis, Ecole Polytechnique in Canada and received his master's degree with us in Course II. He had been an engineer with Canadian Fairbanks Morse Company and for the last 16 years was vice-president of B.G.L. Engineers and Builders, Ltd. of Montreal. A member of the Corporation of Professional Engineers of Quebec, he served on the board of directors of l'Ecole Polytechnique and was a past president and life member of its alumni association. He was a church warden and member of the school board of Saint Madeline parish in Outremont. He is survived by his wife, the former Marcelle Mercier; a son, Jacques; a daughter, Marie; three brothers, Denis, Etienne and Father Marcel; and six sisters, Sister Madeleine de la Croix, Sister Marie du Cenacle, Sister Marie-Auguste, Sister Marie Leonise, Sister Marie Emma and Jean of Montreal. J. Newell Stephenson, '09, forwarded the information for these notes.

**Ollie Bardes** and **Romney Mellen** are among the top SCF leaders, both having gone well over 100 percent of their quotas in the Cincinnati and El Paso areas. You have received the recent letter from Class Agent **Larc Randall**, suggesting that a contribution to the Amity Fund now would be a superb way to back up (and add to) the record-breaking gift which the Class of 1921 gave to Technology last summer. We commend both of these vital funding projects for your continued generous support.—**Carole A. Clarke**, Secretary, c/o International Electric Corporation, Route 17 and Garden State Parkway, Paramus, N.J.; **Edwin T. Steffian**, Assistant Secretary, c/o Larsen, Steffian, Bradley and Hibbard, 711 Boylston Street, Boston 16, Mass.

'22

The password is 'Plan Ahead.' Now is the time to have all your business activities cleared on your calendar for at-

tendance at our 40th Reunion, June 7-10, New Ocean House, Swampscott, Mass. Let **Parke Appel**, Old Farm Road, P.O. Box 137, Dover, Mass., know that you plan to be present. . . . Our hard-working and ubiquitous secretary, **Whit Ferguson**, is off on a cruise to the Mediterranean. Before he left, we heard that Whit had been given a vote of confidence from Washington by his reappointment as director of the Buffalo Branch of the Federal Reserve Bank of New York. . . . Word has been received that **Conrad E. Ronneberg**, V, has completed his Washington assignment as program director of the secondary school projects in science education for the Division of Scientific Personnel and Education of the National Science Foundation. Dr. Ronneberg is back at his former post as professor of chemistry at Denison University, Granville, Ohio. . . . **Latimer F. Hickerell** completed his job as president of the American Institute of Electrical Engineers and has been elected a member of the United Engineering Trustees, Inc., of New York.

Word reaches us that **William R. Scott**, 123 Inwood Road, Bridgeport, Conn., will relinquish his responsibility as manager of export sales of Remington Arms at the end of this year. He will have completed at that time more than 33 years with his company as he puts away his slide rule for a well earned retirement. . . . A nice salute appeared in a recent issue of the Boston Sunday Globe to our classmate, **William W. (Bill) Russell**. "He is one of the most widely known transplanted Canadians in the Greater Boston Area. Russell is one of the most popular and active members of the Canadian Club of Boston." . . . **Ab Johnson**, proud new grandfather, keeps in touch with things in New York City on occasional shuttle flights from Muncie, Ind. The honor of having Johnson Airport named after him in Muncie has not reduced his active interest in family, friends, business, civic activities and the Class of '22. . . . **William H. (Bill) Mueser**, of Moran, Proctor, Mueser and Rutledge, is in constant demand as a consultant in remote places of the world. However, he touches base in New York long enough to keep in touch with major operations here.

Our sympathies are extended to the families of **Arthur L. Jones** of Tryon, N. C.; **E. R. Rushton** of Charlottesville, Va.; Colonel **Malcolm R. Cox**, Carmel, Calif.; **J. E. Karcher**, Roslindale, Mass.; and **F. F. Sweeney**, of New Haven, Conn.

We have received the following changes of address: **John H. Wishman**, Hot Springs, Ark.; **David A. Weill**, West Redding, Conn.; **Francis S. Sinclair**, Keene, N. H.; **Luciano A. Preloran**, Buenos Aires, Argentina; **William J. Miller**, Kerrville, Texas; Dr. **Edwin D. Martin**, Hot Springs, Ark.; **Reginald S. Hall**, Cedar Grove, N. J.; **Broderick Haskell**, New York, N. Y.; and **George R. Hopkins**, Orleans, Mass.—**C. George Dandrow**, Assistant Secretary, Johns-Manville Sales Corporation, 22 E. 40th Street, New York 16, N. Y.; **Whitworth Ferguson**, Secretary, 333 Ellicott Street, Buffalo, N. Y.

# '23

Dr. Julius A. Stratton discussed "The Problems of Modern Education" on January 4 to start off the 1962 series of talks to benefit the Mount Auburn Hospital. . . . Dr. D. G. Brinton Thompson, chairman of the History Department at Trinity College, spoke on "The Ideals and Traditions of the Republican Party" at the West Hartford, Conn., Women's Republican Club in January. Dr. Thompson has been a faculty member at Trinity College since 1945. He is the author of "Ruggles of New York" published in 1946, "Gateway to a Nation" published in 1956 and numerous articles in academic journals. . . . Norman L. Weiss was elected a director for 1962 of the American Institute of Mining, Metallurgical and Petroleum Engineers. Norman lives in Tucson. . . . Robert L. Hershey, Du Pont Vice-President, had a very interesting article in the January-February issue of the Du Pont Publication "Better Living" on the subject "The Desperate Race Against Obsolescence." He explains how competition and customer demand forces Du pont to tear out perfectly serviceable equipment to install more modern machines.

We regret to report the death of Hilton W. Long on December 21, 1961. Hilton was 66 years old and a former real estate and insurance broker in Needham. A native of Lexington, Ky., he entered M.I.T. with the class of 1918 but left to enlist with the American Ambulance Field Service in France. He served through several campaigns, receiving the Croix de Guerre from the French government. When the United States entered the war he joined the Army Air Corps. Following World War I he served as a flying instructor with the regular Army Air Corps. Prior to World War II he was associated with his father in the construction business. During World War II he saw foreign service as a major in the Air Transport Command. For a dozen years after the war he operated a real estate and insurance business in Needham. Since retirement his hobby has been amateur (ham) radio. In November, 1953, he talked with the Russian expedition to the Pole of Inaccessibility in the Antarctic, some three weeks before official Russian announcement that the 18-member force had reached their objective. . . . We wish to report the following address changes: Charles H. Ducote, Trailmobile, Inc., 711 Third Avenue, New York 17, N.Y.; Charles Goldstein, 85 Devonshire Street, Boston 9, Mass.; Miss Myrna S. Howe, 2055 North Minoru Drive, Altadena, Calif.—Herbert L. Hayden, Secretary, E. I. du Pont de Nemours and Company, Leominster, Mass.; Albert S. Redway, Assistant Secretary, 47 Deepwood Drive, Hamden 17, Conn.

# '24

After all these years in Darien, the Prescott H. Littlefields have moved out a bit farther—to Norwalk, Pine Oak Lane,

to be exact. What with the New York, New Haven's future hanging in the balance, this seems like a move in the wrong direction. . . . In a somewhat longer move, Harold L. Hazen is back home after a year's stay in Istanbul. You will remember he was acting president of Robert College. Now they've installed a new man, and Harold has returned to deaning at the Institute. . . . Never did report this one, probably because we just learned about it. Charles L. Reed, 3d, was graduated from M.I.T. last June, is now with DuPont in Wilmington. His father Charles, who probably is rarely called junior now, has been with General Electric in Erie, Pa., for lo, these many years. It was when your secretary was notified that he had moved from Erie to Wilmington and got suspicious, that the reason for the confusion became evident. The files are now O.K. Charlie is back home in Erie. . . . Boynton J. Fletcher has been named to the board of directors of the American Standards Association. As many of you know, Curly is vice-president in charge of engineering for Alcoa in Pittsburgh. . . . A nice letter from Don Moore, another Pittsburgher, tells of a wonderful-sounding trip he took last summer with his daughter and niece, hitting the high spots of the Rockies and West Coast. His daughter, by the way, graduates from high school this June and has yet to receive any mark other than A. Sounds like a typical '24 daughter.

Maine's Civil Defense Director, Colonel Walter H. Kennett has resigned. Walt has had the job for six years. He told the governor that he had been "advised by my physician to undergo an extended period of rest in order to improve my health." We're sorry indeed to hear there's something wrong with Walt, but if that job in Maine is as thankless and frustrating as it is most places, it's enough to undermine anyone's health. . . . Some of you will remember when the Navy was scrapping ships right and left during the 20's and the Naval Academy also scrapped a lot of its students. Many of them found their way to M.I.T., and Harrison G. White was one. He graduated in VI-A and for many years he was a consulting engineer in Springfield, Mass. During World War II he was in the South Pacific as commander of a destroyer escort division and was twice decorated. Recently he retired to Stockholm, Maine, and on January 12 he died. . . . Afraid that's all there is in the mailbag at the moment. With spring in the offing, however, your secretary hopes you people will be coming out of hibernation and making more reportable news.—Henry B. Kane, Secretary, Room 1-272, M.I.T., Cambridge 39, Mass.

# '25

The newspapers kept you well informed during the early part of February of the activities of Attorney-General Robert Kennedy in Japan. For some reason or another, the press overlooked the fact that during the same period there were

two "K's" associated with the Class of 1925 who were really burning up Tokyo! Ed Kussmaul headed for Japan the latter part of January, and an air mail letter dated January 30 indicated clearly that Ed and "Kamy" Kametani had gotten together immediately and were in the process of painting the town red. We will have to await Ed's return to obtain all of the details; but he did indicate he had been given a bath by a very pretty Japanese girl, and that he was soaked and washed over 99 and 44/100 percent of the areas but had to wash his own face! Before the bath routine, he and Kamy had had "Tempura" in a fine little side restaurant where Kamy knew all of the pretty waitresses! Kamy added a note indicating that if any of his classmates are coming to Tokyo on business or pleasure they should be certain to look him up. He has hopes that his business may bring him back to the States again.

Two other classmates have made the newspapers. Maxey Jarman, who has so many activities that we cannot hope to keep up with them, has been made a director of the Mutual Life Insurance Company of New York. . . . Ben Hampshire, vice-president, General Manager and a Director of the Montauk Electric Company with headquarters in Fall River, Mass., spoke recently to the Industrial Management Club of Greater Fall River on the topic "The Making of a Good Supervisor." Ben has been associated with Montauk Electric since 1945, and he is also a member of the Technical Liaison Company of the Yankee Atomic Electric Company, and a member of the board of trustees of the Truesdale Hospital. . . . It is my sad duty to report the death of two members of our class. Word has just reached us that Raymond F. Cornell passed away on May 22, 1960; and more recently, that James W. Derrig died during January 1961, no specific date being mentioned.—F. L. Foster, Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

# '26

This month I am definitely not on a jet. Three days ago I did go by jet from Boston to Philly in 45 minutes. Total lapsed time from the house in Winchester to the laboratory in Chestnut Run, Del., was in the bracket between 7:00 A.M. and 9:45 A.M. But how different a little weather can make it. Awaking at 3:00 A.M. I noticed the snow which stopped by 6:00 A.M. leaving three inches on the ground. In Wilmington this had resulted in the declaration of a state of emergency, but I did not know it when I decided to catch the airport shuttle (without breakfast) at 6:30 A.M. I became so annoyed with the big deal the radio was making about it that I finally asked the driver to shut it off. There was good reason, however, for all of the hocus pocus. Three inches of snow in this area is equivalent to three feet in New England. The normal 45-minute drive from Wilmington to Philly took three and a half hours—honest. Consequently the notes are this time being

written on a bumpy New Haven train, and at 3:00 P.M. we are passing through Port Chester, N.Y. There's no pressure this time to finish the notes in 45 minutes. The other morning I was alone in the airport shuttle car, and while shooting the breeze with the driver, I learned that he had driven **Jim duPont** and his family to the airport on the previous Saturday where they caught a plane to take them on a two-week holiday in Florida. . . . Last evening as I was starting through the revolving door into the DuPont Building, **George P. Edmonds** was approaching the door on the inside. He waved for me to keep coming and we had a pleasant, if short, chat. George is now board chairman of the Wilmington Trust Company whose offices are located in the DuPont Building.

Recently I wrote to a company called the Hull Corporation in Hatboro, Pa., for some literature on their resin mixing equipment. When the letter in answer started off, "Dear George: In scanning the mail this morning I noticed your inquiry, etc." I thought I was reading an epistle from someone who had recently completed a letter writing course and was exhibiting his skill. I found out differently though—it really was from **Frank N. Cramton** who is vice-president of the Hull Corporation. Let's see what Frank has been doing by quoting from his letter. "I should probably apologize for the seeming inability to find time for reunions or to write letters. However, I imagine I have lots of company among those who have five children to put through college, with the resulting need for attending graduations and other school functions. For instance, David graduates from medical school on June 11 this year, which will probably coincide with Alumni Day again. And in 1961, the weekend of the reunion came on the only weekend that Jean and her family could spend with us during most of the year. And so it goes. But enough of excuses! I do enjoy so much your notes in The Review and one of these years will have the kids on their own and find time to see you at a reunion. After David graduates, only John will be in school. You probably don't remember them as they were rather young when we moved from Chesterford Road." . . . A recent article in the newspaper stated that **Rex Bristol** had been elected president of the Massachusetts Foundation. Being curious, I wrote to find out what it was and received the following resumé. "The Massachusetts Foundation is a voluntary trust established to finance the Taxpayers Federation. The money comes in the form of contributions from taxpayers, both individuals and corporations. Under the provisions for voluntary trusts, the amounts of the contributions and the identities of the persons making contributions may be and are kept in the strictest of confidence. The Massachusetts Federation of Taxpayers Association confines its activities to programs whereas the Massachusetts Foundation handles the money raising and financing."

When a change of address recently came through for **Dick Plummer**, I was surprised to note the new address c/o

John Plummer at 140 Federal Street, Boston, which is my business address. Upon telephoning I learned that John Plummer, Dick's brother, is a Boston attorney and that Dick is still down "south of the border," his present address being U.S.O.M. Costa Rica, c/o American Embassy, San José, Costa Rica. . . . Another address change moves **Tony Gabrenas** from Panama to 206 Renfrew Avenue, Trenton, N.J. . . . A clipping from the Boston Globe tells of a new, important assignment for **Bill Meehan**. "William Meehan of Waban, a director of the New England Division of A & P Food Stores since 1943, has been appointed head of the company's Springfield unit. Meehan succeeds John S. K. Hunt who is retiring after 40 years with the firm. Meehan is a graduate of M.I.T. He joined A & P in Boston in 1928, and has served the company in Springfield and New York. In 1943, he was elected director of operations for the New England Division and two years ago was made director of store development. The company's Springfield unit operates stores in Western Massachusetts, most of Connecticut, and parts of Vermont and New Hampshire." Congratulations Bill—I hope this does not mean that we will no longer see you from time to time in Schrafft's restaurant. . . . Had lunch with "**Pink**" **Salmon** the other day, and he mentioned that on a recent trip to New York he talked with **Dave Shepard** by telephone and saw **Johnnie Spence** to wave at. Until "Pink" told me, I had not realized that John was with Merrill, Lynch, along with **George Leness** and **Bill Forrester**. I have already written too much and the train is really shaking me up between Bridgeport and New Haven so it's obviously time to say 'Cheerio' until the May issue.—**George Warren Smith**, c/o E. I. du Pont de Nemours and Company, 140 Federal Street, Boston, Mass.

## '27

The plans for our 35th Reunion are progressing and we are looking forward to seeing every classmate who can possibly make it to Oyster Harbors Club, Osterville, Mass., on June 8-10. **Bob Hancock** says he will be there and he is after **Frank Mesker** to join him. . . . With deep regret we record the death of **John A. Herlihy** on February 9, bringing to an end a most distinguished and interesting career. During our undergraduate days, Jack learned to fly and, on graduation, he went into the Navy and furthered his pilot training. Going into the early administrative side of air transportation, he was with the old Transcontinental Air Transport organization in St. Louis and laid out the basic transcontinental route, which is now TWA. During the depression he flew the air mail between New York and Cleveland and then joined United Air Lines in 1933. In 1960, United's appreciation of his capacities was shown by their naming one of the first DC-8's the "John A. Herlihy"—an honor unduplicated to my knowledge. Jack was the prime mover in establishing

the basic parameters within which today's airline jets were designed. At the time of his death, he was senior vice-president in charge of engineering and maintenance of United Air Lines, and lived at 621 Woodstock Road, Hillsborough, Calif. His funeral was at Plainfield, N.J. He is survived by his wife, Helen; a son, John A. Herlihy, Jr., of San Mateo; a daughter, Mrs. George S. Walter, Owyhee, Nev.; his mother, Mrs. Maude K. Herlihy, Wilton, N.H.; and three grandchildren.

We also regret to announce the death of **Cortelyou L. Simonson**, on February 11. Simonson joined Morgan Stanley and Company in 1935, and became a partner in 1947. During World War II, he attained the rank of lieutenant colonel. He was a member of the board of governors of the Monmouth Medical Center. At the time of his death, he lived on Oakes Road, Rumson, N.J., and is survived by his widow, the former Margaret McAdoo, and a son, Stephen C. Simonson.

**John C. Parker**, a member of the Civil Defense Agency, recently was named to head up the federal shelter survey program in Springfield, Mass. He designed many of the buildings at the U.S. Military Academy at West Point, N.Y., during a 10-year government term there, and spent three years at Westover AFB where he worked on new construction with the U.S. Corps of Engineers. He has also worked with Monsanto Chemical Company as a division engineer. . . . **Arthur J. Connell**, a vice-president of Stone and Webster Engineering Corporation, has been recently elected a director of the firm. He joined the company in 1951 and became a vice-president in 1956. Art was a vice-president and director of E. B. Badger and Sons Company when that firm was merged with Stone and Webster 10 years ago.

The 14th Annual M.I.T. Fiesta, sponsored by the M.I.T. Club of Mexico City, was held there on March 15-17. Among those listed in the brochure who planned to attend were Conchita and Loby Lobdell. Incidentally, in connection with this event, the "Eager Beaver" award is a memento for attendance at four fiestas, and for attendance at 10 the "Eagerissimo Beaver" award. Conchita and Loby Lobdell are the only ones to date who have received the latter award, having attended 13 Fiestas. . . . It is with regret that we record the death of Colonel **Benjamin F. Vandervoort**. We have no details at this time. His home was at 512 Vernon Heights Boulevard, Marion, Ohio. . . . The following new addresses have been received: **Manual R. Castellanos**, 234 Mountain Avenue, Arlington, Mass.; **George D. Fexy**, 4302 E. Burns Street, Tucson, Ariz.; **Bolick J. Shadrake**, 5219 Berkshire Drive, North Olmsted, Ohio; and **Robert C. Wallace**, 2909 North Cambridge Drive, Lansing, Mich. During the last 16 months we have had notices of changes in address of 34 classmates, involving moves of considerable distance from the previous location. We wrote to all of these asking for the meaning of the move, and we have had replies from 17—just 50 per cent.—**J. S. Harris**, Secretary, Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

Recognition and honors continue to come to our good classmates. A news release of January 9 from the North Carolina State College Office of Information Services announces that **Elliot B. Grover** has been elected to honorary fellowship by the Textile Institute in Manchester, England. This is the highest honor bestowed by the Textile Institute and is in recognition of major advances in textile technology or science achieved by an individual as a result of ingenuity and application over many years. Elliot is Abel C. Lineberger Professor of Yarn Manufacturing and head of the Department of Textile Technology, School of Textiles, at North Carolina State College, where he has been a member of the faculty since 1944. He is known throughout the world for his work in textile technology and has served internationally as a consultant and as a member of several official commissions. The "Handbook for Textile Testing and Quality Control," of which Elliot is co-author, is used as a textbook at colleges and universities throughout the world. . . . We are pleased to learn from the local press that **Edgar Pitt** has been named president of Sherman Paper Products Company, Newton, Mass. This company was merged with St. Regis Paper Company in 1960 and operates as a separate division. Ed began his professional career in advertising and marketing, which led him into the paper business. He has been with Sherman Paper Products Company since 1932 serving in various capacities including advertising manager, and vice-president and general manager. He was recently elected a director of St. Regis Paper Company.

The Morning Union Leader of Manchester, N.H., for November 6, 1961, carried the story of yet another classmate's promotion. **Samuel B. Smith, 2d**, has been named chief consulting engineer of Ebasco Services, Inc., with headquarters in New York City. Since joining Ebasco in 1937, he has held numerous scientific and economic assignments including membership in a co-ordinating group for the Northwest Power Pool during World War II and head of a team to survey the giant Snowy Mountain project for the Australian Government in 1955. . . . **Harold E. Curtis** is the author of a paper on "Interstitial Channels for the TD-2 System," published in the Bell Laboratories Record for November, 1961. Harold joined the Development and Research Department of American Telephone and Telegraph Company in 1929 after earning his S.M. degree in electrical engineering. In 1934 he transferred to Bell Telephone Laboratories, where he continued his work on transmission problems relating to various carrier systems. Since 1947 he has been engaged in systems engineering studies of the TE, TD-2, TH, and TJ, and the experimental satellite microwave radio systems. He is the author of various papers and patents in this general field of work. To each of you, gentlemen, our great ad-

miration and heartiest congratulations! With deep regret we report the death of **Stuart E. Currier** on January 15, 1962. Those who knew Stuart as a student will recall that he lived at the M.I.T. dormitories and worked in the dormitory office. He attended Bowdoin College before entering the Institute. He was manager of engineering services, Communications Division, International Telephone and Telegraph Corporation, Federal Division at Clifton, N.J., and had his home in Maplewood, N.J.—**Walter J. Smith**, Assistant Secretary, 15 Acorn Park, Cambridge, Mass.; **George I. Chatfield**, Secretary, 11 Winfield Avenue, Harrison, N.Y.

The Firestone Tire and Rubber Company announces the appointment of **Dick Sawyer** as president of the Firestone Textiles Company. His division includes 2,500 employees in Akron and plants in North Carolina, South Carolina, Woodstock, Ontario, Sao Paulo, Brazil, and Buenos Aires, Argentina, and produces cotton, rayon, and nylon fabrics for use in the tire trade. Dick received his bachelor's degree from Lowell Tech and his master's degree in Course II from M.I.T. in 1929. He started with Firestone in 1929 in their New Bedford, Mass., mill and went from there to Gastonia, N.C., and then to Fort Worth, Texas. From 1945 to 1957, he managed the textile plant in Sao Paulo. Our congratulations to Dick.

**Ira H. Abbott**, Course XVI, who has been with NASA and the National Advisory Committee for Aeronautics, predecessor of NASA, since graduation, retired at the end of last year as director of advanced research and technology at the NASA headquarters in Washington. The NASA administrator expressed regret over Ira's retirement, saying, "His achievements and his leadership in research have served in very important ways to advance our country from the forefront of aeronautics to the forefront of space. All of us in NASA are proud of his long, untiring and selfless service to our nation's good." Ira began his career at the Langley Aeronautical Laboratory of the National Advisory Committee for Aeronautics as a junior engineer, becoming assistant chief of research in 1945. He transferred to the NACA Washington headquarters in 1948 and was appointed assistant director of research (aerodynamics), which position he held until 1958. He was promoted to director of advanced research programs in 1959 and to director of research, from which he retired, last November.

He made his early contributions in aerodynamics research. He wrote a large number of technical reports on wind tunnels, airship dynamics, airship aerodynamics, laminar flow, and theory of wing sections. He was instrumental in establishing programs for high-speed research airplanes, for the creation of many unique research facilities of the NACA and NASA, and for the scientific efforts

leading to success in supersonic flight. Among present research and technology programs under his supervision are the X-15, the supersonic transport, the nuclear rocket and advanced re-entry programs of great importance to NASA's manned lunar project. In his career at Washington, he has served on many committees and boards advising the military services, civil aviation, Department of Defense, the scientific community, and the North Atlantic Treaty Organization. He has testified before Congressional committees for legislation in aeronautics and space. We congratulate Ira on his outstanding dedication and contribution to our country and wish him much happiness in his retirement.

To further **Wally Gale's** round-the-world trip, we had the following interesting letter written from Bangkok: "With jet travel and M.I.T. people scattered about the globe spreading good will, it certainly is not newsworthy to be in Bangkok. Nevertheless, and with apologies for surfeiting you with reports from the Gales, I'd like to add this postscript to my letter from Tokyo. We have often kidded the Alumni Office about listing as Alumni anyone who happened to take a wrong turn on Massachusetts Avenue and walked through the front door. I withdraw my flip comments of the past, and thank them for this very wise custom. It happened this way. My very efficient secretary, knowing that we were to visit Bangkok, sent me a list of Alumni from this area. Among them was **Boon C. Indrambarya**, to whom I wrote in the hopes of digging up a little class news. I did not remember him, and it was obvious when he phoned that he did not know me from Adam. But he was most cordial, and picked us up to take us to his very interesting, old and elegant home for "Thai tea"—a tasty concoction of cocoanut, prawn, and garlic (the Thai people seldom drink tea or coffee). We had a fascinating time hearing about local events and history, but the point of my story is that Mr. Indrambarya was sent to the U.S.A. by his government in 1927 to study biology, took the wrong train, ended up in Boston, and entered M.I.T. He was soon yanked and sent to Cornell, where he finally graduated as an expert on fisheries! He was formerly director of fisheries for the government and is now dean of the Department of Fisheries at Kasetsart University here in Bangkok. Obviously, my accepting his hospitality on the basis of being a classmate was a bit embarrassing to me, but it was a delightful experience, for which I thank our all-knowing Alumni Directory. I did dig up one nugget on a legal classmate, however, from Mr. Indrambarya: **Flaviano M. Yenko**, Course VII, is now deputy commissioner of the National Institute of Science and Technology in Manila!

"There is no M.I.T. Club in Bangkok, although there are 40 names on my Bangkok list. Professor Goldblith met with several of them only last November, so I did not try to get them together again. However, the M.I.T. Club of Hong Kong put on quite a show for us during our three-week visit there, with a luncheon (Shanghai style food) and a

formal dinner (Cantonese style). The reason for the double header is that there is considerable discussion, if not deep feeling, among our group as to the merits of Shanghai versus Cantonese cooking. The only solution was to have both, and if you have ever worked your way through a real Chinese meal, you know that you couldn't tackle both without a few days' respite in between. The chief characteristics of our Hong Kong Alumni are that they are all doing exceedingly well in lines of work for which their M.I.T. training gave them no preparation (import-export trading, for instance); that they are a transient group, having come from all parts of China to the one point of contact with the Free World and going on to other Asian areas as opportunities develop, and finally, that they all have a real pride and interest in the Institute.

"Aside from M.I.T. affairs, Joan and I continue to be thrilled with our first trip to the Orient. We set some kind of record for Americans by being in Hong Kong for seven days before we bought a thing. However, the situation changed soon thereafter, and more foreign aid has been spread among the shops and tailors by the Gales. As is true in all tourist spots, prices have gone up, so that custom-made three-piece Scottish tweed suits now cost \$55 versus \$45, and shoes are \$14 versus \$12 per pair. Even with the duty which we must now pay (with the lowered quota), the temptation to buy is strong. Socially, we had a fun time in Hong Kong spending New Year's Eve with 400 Britishers and four other Americans at the Hotel Peninsula, and being entertained by 'friends of friends,' including one English couple who have lived in China for 40 years, and Sir Michael and Lady Hogan, to whom some Irish friends had written (he is chief justice of Hong Kong). I got in some golf at the Shek O Club—a beautiful spot overlooking Repuke Bay, but my game was not as good as the scenery. And so it goes. We miss a lot of things back home, but as we sipped our Bloody Marys at the swimming pool this noon and read of the Big Freeze of '62 in the U.S.A., we decided we could stick it out a bit longer." . . . Jim Coe advises that his latest book to be published is called "Common Stocks for Investors and Traders." Jim received his master's degree in Course VI.—**Fisher Hills**, Assistant Secretary, 62 Whittemore Avenue, Cambridge 40, Mass.

## '30

Two of our classmates have reported major moves during the last month. **Howie Gardner** has for the second time moved from industry into education. As of February 1 he became senior research associate and faculty member at the Institute of Paper Chemistry in Appleton, Wis., after some 13 years as research director of Fiberboard Paper Products Corporation of Antioch, Calif. You may recall that his last move in the same direction (1936) was from Eastman Kodak Company to director of the M.I.T. Practice School

Station at Bangor, Maine. He says that while he enjoyed "the challenge of directing an applied research laboratory concentrating on product development in the fast-moving field of paperboard packaging-shipping containers and folding cartons," he is now "looking forward to more fundamental technical work and broader service to the pulp and paper industry." Howie and Teddy have two daughters: Ellen Gardner Wilde attended Oregon State University, University of California and Mills College and has a son Mark David, two and one-half. Carol is a senior at Stanford University, having spent her junior year at University of Freiburg in Germany. . . . **George Gassett** and his family are spending a year in Japan where he is representing Stone and Webster as consultant in the design and construction of a butanol-octanol plant for Daikyowa Petrochemical Company, Ltd. of Tokyo. This is George's second Japanese assignment. Those of you who attended the 30th Reunion will remember the striking Japanese costume that Quinby acquired during their last visit to Japan. We shall expect to see another example of Japanese high fashion at the 35th, Quinby. The Gassets' address is Apt. 201, 37 Banchi, Shiroyama-Choo, Nakano-Ku-Tokyo. They, like the Gardners, have two daughters. Quinby Marcia, 15, is a high school sophomore at the American School in Tokyo. Gretchen, 18, is a freshman at University of Massachusetts majoring in education. George says that he and Quinby now feel quite at home in Japan but haven't made much progress in mastering Japanese. Both he and Howie report having seen **Bart DeLorenzo** in San Francisco. . . . **Ollie Green** is helping the Navy to use its production equipment more efficiently at the U. S. Navy Production Equipment Control Office in Philadelphia. . . . **H. H. Scott**, Inc., was recently in the news again as recipient of the nation's first Distinguished Service Award from President Kennedy's Committee on Employment of the Physically Handicapped. The Award was made to Scott for "work in setting up production facilities in the Bedford, Mass. Veterans' Hospital, setting a new pattern in advanced therapy". . . . New addresses: **Harry J. Fekas**, 14 Luanita Lane, Newport News, Va.; **J. L. Emilien Langevin**, 2110 St. Clare Road, Mount Royal 16, P. Q.; Dr. **Robert D. Nutting**, Pigments Department, E. I. duPont de Nemours and Company, Newport, Del.; **Ernest W. Reisner**, 803 Pickett Road, Fairfax, Va.; Dr. **Morris F. Shaffer**, 7723 Burthe Street, New Orleans 18, La.—**Gordon K. Lister**, Secretary, 530 Fifth Avenue, New York 36, N. Y.; **Ralph W. Peters**, Assistant Secretary, 249 Hollywood Avenue, Rochester, N. Y.; **Louise Hall**, Assistant secretary, Box 6636, College Station, Durham, N.C.

## '31

**Ed Worden**'s recently reported trip to England and the Continent must have been fruitful. A note received from London says he will be away when the class

notes are needed. . . . "The English are wonderful people . . . very friendly . . . and keep us on our toes." . . . **John M. Cleveland**, a faculty member at the University of Colorado, received a National Science Foundation faculty fellowship for the academic year 1962-63. He will do research at Cambridge University in his field of astronomy. . . . **Alfred Ziegler** of Baptist Hill Road, Palmer, Mass., who went on to a master's degree in metallurgy in 1933 and then started work at the wire mill in his home town, was appointed Works Manager of the Wickwire-Spencer Steel Division, CF&I, effective January 2, 1962. . . . **O. Glenn Goodhand**, who was originally commissioned at M.I.T. in the Coast Artillery Reserves and who went on up to reach the rank of colonel in 1958, was recently nominated to brigadier general (according to **Irving W. Finberg**, Course XVII and Regular Army). Glenn is the first four-year Tech man to attain general rank although there are a great many generals who went to M.I.T. for advanced degrees. Glenn is presently serving as executive to the Assistant Secretary of the Army, Research and Development. Among other things he is an Army flyer. . . . **Robert J. Fleming, Jr.**, who came to Tech as an Army graduate student was just sworn in as the governor of the Panama Canal Zone. He lives in Balboa Heights. He is a major general in the Corps of Engineers and was most recently the Southwestern Division engineer.

**Dr. James B. Fisk**, President of Bell Telephone Laboratories, was named a director of the Equitable Life Assurance Society. . . . **Emilio G. Collado** is a candidate for election to one of 13 major offices on Harvard University's Board of Overseers. . . . New addresses reported are: **Gerald A. Benoit**, 548 Dennison Drive, Southbridge, Mass.; **Edwin L. Bicknell**, 17 Mann Hill Road, Egypt, Mass.; **Curtis B. Brown**, 1407 North 25th Street, Boise, Idaho; **Daniel A. Cook**, 83 Oak Street, Lexington, Mass.; Dr. **Paul H. Doleman**, Tufts University, Chemistry Department, Medford 55, Mass.; **Emmanuel J. Fournier**, 2225 Boulevard Henri Bourassent, Quebec 3, P.Q., Canada; **Patrick J. D. Harney**, 475 Trapelo Road, Waltham, Mass.; **Winthrop D. Hodges**, 128 Arlington Place, West Palm Beach, Fla.; Captain **George C. Humphreys**, 99 Mill Hill Road, Southport, Conn.; Dr. **Frederic C. Jelen**, Lamar State College of Technology, Chemical Engineering Department, Beaumont, Texas; **Joseph H. Pasell**, Box 66, Lyndon Center, Vt.; **Frederick A. Ritchie**, 35 Hundreds Road, Wellesley Hills 81, Mass.; Colonel **Charles Robbins**, Material Command, Army Chemical Center, Md.; Dr. **Valeria Schneider**, Rt. 1, Box 65, Mission, Texas; **Maurice L. Sellers**, 22 Goodwin Road, Newport News, Va.; **John E. Spalding**, Minnesota Mining and Manufacturing Company, Paper Division, Hartford City, Ind.; **Morley G. Taylor**, 244 Saint James Street, West, Montreal 1, P.Q., Canada; **Jack R. Weprin**, 16 Sutton Place, New York 22, N. Y.; **Hugh S. Wertz**, Western Electric Company, Inc., 195 Broadway, New York 7, N. Y.

—**Gordon A. Speedie**, Assistant Secretary, 90 Falmouth Road, Arlington 74, Mass.; **Edwin S. Worden**, Secretary, 6 Murvion Court, Westport, Conn.

## '32

More news from **Herb Ross** in a letter which he has written to **Tom Sears**. "It's always good to hear from the U.S.A. As you might expect, it is one thing to come over here as a tourist and live at the best hotels where nearly everyone speaks your language, and an entirely different thing to try to get into technical details in 'lousy' French with the general population who do not speak English. We flew Bill, our son, here from the U.S. for Christmas, and also Nancy from Paris; Martha is in school here at the American School, Leysin, so we all had a real good week. I found time to take the whole family to Zermatt for a few days of skiing and relaxation after the holidays." Herb confirms that he is in Europe on a special mission for the United Shoe Machinery Corporation and expects to be there for about three years. He goes on to say he expects to return to Boston for a short time next summer and hopes to make the dates coincide with the reunion. . . . In November **Carroll L. Wilson**, who is now a professor at the Institute directing M.I.T.'s Fellows in Africa, which assigns men to industrial development posts in several of the newly formed African nations, spoke at a fall meeting of the M.I.T. Club of New Hampshire on the topic "Changing Face of Tropical Africa." Carroll is also a consultant to Sargent Shriver, Director of the Peace Corps. Returns to our Reunion Questionnaire are coming in every day, quite a few with bits of news. . . . **Art Marshall** has become active in the academic field. His paper entitled "Federal Enforcement of a No-Strike Clause by Injunctive Relief" has been published in the Symposium of Labor Relations Law issued by Tulane University Law School, and another entitled "Carrier Service and the Picket Line: A Dilemma" has been published in the "Transportation Journal." He now has offices in Springfield, Mass., and Boston, Mass. . . . **Charles W. Crossland** joined the regular forces of the Royal Canadian Air Force in 1946 and tells us now that he is retired as of 1959 and is employed at Canadair, Ltd., in Montreal. . . . The latest word from **Jim Harper** is that he will take time off from his duties at the Armed Forces School at Fort McNair, Washington, D.C., to attend the reunion. Jim is lecturing for two-week periods at various cities throughout the United States on subjects including national resources, our organization for national security and the U.N. . . . **Earl F. Anderton** is now in Switzerland and writes "have been in Zurich on a new assignment for Scott Paper Company, for about a year. A very interesting job, lots of travel. My wife and I love it. My office is Scott Overseas Corporation, Todistrasse 51, Zurich, and my home address is Birmensdorferstrasse 59 Uitikon (ZH), Switzerland. I

would be glad to see anyone passing this way." Maybe Earl can get together with Herb Ross and come over for the reunion. . . . We seem to be approaching the time when our sons and daughters are having weddings and graduations to interfere with our reunion. **Jim Snow** has a daughter getting married the weekend of our reunion so will not be able to attend. Jim is still with Lever Brothers, at the plant in Hammond, Ind., after having served the company in Cambridge, Paterson and Edgewater, N.J., New York City, Baltimore and St. Louis. . . . **Phil Bruce** is teaching chemistry and physics at Long Beach City College. . . . From Mahwah, N.J., comes word from **Henry J. Chapin**, who is still with American Brake Shoe Company at their Research Center. . . . A small but enjoyable get-together of members of the class from the Boston area was the result of guests brought to the January 29, 1962, meeting of the Alumni Council. We had a full table with Tom Sears, George K. Kershner, Bill Pearce, Jim Smith, Bob Minot, Richard W. Berry, Elwood Schafer and myself. A great deal of the conversation concerned those not present whom we hope to see at our class reunion on the Cape in June.—**G. Edward Nealand**, Secretary, Room 3-137, M.I.T.; **Elwood W. Schafer**, Assistant Secretary, Room 10-318, M.I.T., Cambridge 39, Mass.

## '33

Our five-star general correspondent from the Midwest, **Cal Mohr**, reports in full on **Bob Smith** of Rochester. Bob is manager of development for a division of Pfandler; his older daughter is about to make him a granddaddy for the second time. His son is in college in California and plans a teaching career after serving his tour of duty with the army; and a younger daughter will graduate from Centenary this June. "Tempus fugit." . . . **Walt Swanton**, also with Pfandler, worries about nuclear waste disposal equipment; quite a problem it is, too. Cal gives a brief glimpse of his own extracurricular activities in reporting that he served 28 times last year as lay reader in his church. There's a combination of dedication and zeal found in few men.

With regret we report two deaths. Dr. **Peter P. Alexander, III**, died January 21 in nearby Beverly. Peter was 75; he came to this country from Russia after completing his studies there and at Liege, Belgium. He founded and headed Metal Hydrides, which has played an important role in the development of atomic energy. . . . The Alumni Office just received word that **William B. Ferguson, XV**, who was with American Viscose in New York, died on March 21, 1955.

On the move: Colonel **John C. Raaen** from La Grange, Ill., to Arlington, Va. Sounds like the Pentagon has another distinguished representative of the class. **Dick Morse** stopped by a few days ago; he is still working effectively to staff the research division of D.O.D. Dick looks younger and healthier on every meeting; if this is what early retirement does, more

of the '33ers should follow suit. The fact is, however, that our Richard is working harder than ever. . . . **Beau Whitton** reports in from Decatur, Ga., where he and Daphne attended Parents' Weekend at Agnes Scott College, where their older daughter is a sophomore. "Two more at home," says Beau. He also reminds us all that we have our 30th a year hence. Great Caesar's ghost, man, have you really looked in the mirror lately? Tempus does fugit! . . . Congratulations to **Bob Gammons, II**, who has recently become a full partner in the patent law firm of Roberts, Cushman, and Grover in Boston. Bob took his law degree at George Washington University. This reminds us of **Cy Hapgood** who specializes in patents, too; Cy spends so much time commuting from Connecticut all the way to Broad Street that he hasn't had time to write recently. Some of you don't have as good an excuse; how about it, boys? After all, you've put away the snow shovel and it's too early to play golf or cut the lawn (in New England at least). Writing class news is fun, but more so if we can all share in what you are doing.—**R. M. Kimball** Secretary, Room 7-206, M.I.T., Cambridge 39, Mass.

## '34

It is a real joy to report that our class has started to achieve a personality breakthrough. High honors go to **Fred Vaughan** for sending me the New York Times article on Dr. **John T. Burwell, Jr.**, and urging me to call him. Over the phone John said he was always interested in reading about classmates and accordingly would tell me about himself. Five years ago he was sought to start the first central research laboratory for American Radiator and Standard Sanitary. Starting alone, his staff now numbers 80, largely Ph.D.'s with a scattering of younger M.I.T. men. He is tremendously interested in his work. The New York Times article covered a wonderful new air conditioner. It can replace the usual half-ton compressor, evaporator and condenser with a 23" x 36" x 12" unit which has practically no moving parts! All that is needed are miniature fans for air circulation. Direct current passing through selected metallic compounds produces the temperature differential. The device was developed to cool heat-sensitive electronic equipment to control missiles. The exciting application to space craft, leads me to think along these lines: today we talk lovingly of the Franklin stove; future generations may do so of the Burwell Space Heater and Cooler! John is constantly talking to space officials, but so far they haven't urged him to go aloft to try it out himself. Commercial use is a possibility, particularly because of its narrowness, simplicity and small space requirements. But a break-through in materials is required before it can be produced cheaply. John says his researchers do not limit themselves only to long range investigations that could lead to improvements of heating and plumbing, as the company is also

interested in diversification. On the other hand, he mentioned the ancient problem of where to place the heating and cooling units to give the maximum comfort. This sounds like a simple problem for a group of physicists to solve, but he says it isn't! What is being done today is only what has been learned by long experience as seeming to be the best. We have learned very little.

John spoke of other matters but asked that they not be printed. Suffice it to say, we can expect 'things that must come' in the near future. This life keeps John busy, as he has to go to the general offices in New York City from his home in Chester, N.J., via the Lackawanna Railroad and often to his lab in metropolitan New Jersey. But he is carefully shielding his group and himself from the demands of other of his company's labs that are working on much shorter range problems. John would not claim that his home is anything exceptional in heating and plumbing or that his 11-year and 8-year-old sons were outstanding in this respect. A physicist is not without honor, save in his own home.

Again we should praise Fred Vaughan for suggesting a call to **Winold Tjark Reiss**. On a midnight phone chat, Win told of his steady work as senior architect for the New York State Education Board. He acts as consultant to public schools and approves their plans for new buildings and grounds. He has to travel a great deal. Lest he have any spare time, he does private architectural work on the side. Ten years ago he did the design work for Laurel Mountain Ski Slopes in Pennsylvania and this led to work for a zoo. Evidently his work was so good that he was picked to do the entire work of the new Children's Zoo in West Orange, Essex County, N.J. This is the 16th largest county in the U.S.A. and the zoo will be located outside of Newark. It will cover 14 acres of a 2,000-acre site. Win has just finished 50 sets of drawings for this project, and it is now up for bid; the whole combination will run some \$300,000. The county will get an awful lot for their money. It will take care of a lot of people, far more per dollar than the standard zoo does. The children will be able to play with and feed such animals as llamas and deer and get really close to ant hills, fish and even an octopus—perhaps the zoo will be successful in getting a friendly handshaking octopus like the one a friend of mine met. It takes a lot of thought to plan for children's maximum participation and for minimum confusion and trouble. Certainly even the miniature railroad has its small problems. Win's son Peter, now 18, plans to go into wild life management. Last summer he took a job on a chicken farm, the only animal he doesn't like. So we can see how Win's success as a zoo architect has come home to roost.

Again Fred Vaughan sent in a New York Times clipping announcing that **King Crosby** had been named vice-president and second chief officer of International Nickels' Huntington Alloy Products Division. . . . **Ed Asch** has been appointed operations manager of the International Division of Vickers, Inc., a divi-

sion of Sperry Rand. Ed will supervise the personnel, engineering, production and marketing activities of the International division and will also, just in case that isn't enough, be responsible for export operations. . . . **Jacob Jaeger** was named vice-president of engineering by Massey-Ferguson, Ltd., of Canada after being with that firm for less than a year. Obviously his reputation as past president of Pratt and Whitney Machine Tool Company had lots to do with it.

**Henry Andrews** gets top honors for his 'unsolicited' letter. It was unsolicited in the sense that we secretaries didn't plead with him directly and personally. All that your secretaries have done is to ask for news over 100 times in a pointed way. Henry, or Ernie as he was called at Tech, wrote **Hal Thayer** from the Henry Shaw School of Botany, Washington University, St. Louis: "I hope the following doesn't seem to be tooting my own horn—if so just discard it, but in looking over the Class News in the January Technology Review I think we could do a little better. It has been my pleasure to be able to travel a little since leaving the Institute and most exciting was last year at the University of Poona in India where I served as a Fulbright lecturer. Mrs. Andrews, our two sons and daughter also went along. My primary task was to establish a basic course in paleobotany (I have drifted far from my Food Technology at M.I.T.) at Poona. After the initial few weeks of sickness and housing problems we began to get into the swing of things and eventually left India loving it more than a little. A few of my old mountaineering pals might be interested to know that I can still get around a bit. One of most pleasant experiences in India was a two-week vacation in Darjeeling. In the course of our visit there I took the kids out on a four-day hike in the general direction of Mount Everest; we followed along the Nepalese border with the great snowy mass of Mt. Kanchenjunga off to the south and eventually reached 12,000 feet—not a great altitude for the Himalayas but it was lovely country and the weather favored us with a fine view of Everest. A good part of the trail we followed led through rhododendron forests and the season (mid-November) was much like being in the White Mountains in October. On a few other occasions we visited hill stations elsewhere: Simla in northeastern India and Ootacamund in the south, partly on business and partly pleasure but always enjoying a hike or two."—Co-Secretaries: **J. P. Eder**, 1 Lockwood Road, Riverside, Conn.; **G. K. Crosby**, Longwood Road, Huntington, W. Va.; **H. E. Thayer**, 415 West Jackson Road, Webster Groves 19, Mo.; **Malcolm S. Stevens**, P.O. Box 93, West Barrington, R.I.

## '35

Some time during the next 30 days, as you read these notes in The Review, you golfers who received notices of last year's Class Golf Championship will be receiving notices of the second annual affair: Medal play at three-quarters handicap

and adjusted for your course rating with that of your opponent. Nearly one third of the matches last year were played in person on local courses. We hope enough of you will participate this year to develop matches in more sections of the country. If you did not participate last year or receive any advance notice and are interested in playing, please contact **Art Marquardt**, Chairman of the Golf Committee, 33 Abbott Road, Dedham, Mass. You need not be an expert; we had handicaps from 4 to 30. **Hal Bemis**, present champion, is going to try to make it tough to dethrone him. Rumors have been floating around about indoor lessons, parlor putting, driving nets in the basement, etc. and at this point it is hard to say to whom these apply—maybe the challengers.

Our first letter this month comes from **Prescott A. Smith**, who is an associate professor in the Mechanical Engineering Department at M.I.T. "I have finally caught up with third class mail and magazines which accumulated during my absence from U.S.A. from Inauguration Day (January 20) to Labor Day. You are doing a grand job with Class News in The Tech Review, and I have enjoyed reading them all. My wife and I were sorry to miss you all at the Centennial Banquet, not to mention all the Centennial activities. We also missed our daughter's graduation and her debut at the Concord Country Ball. But the next week she and her 16-year-old brother flew to India to join us. My temporary 'mission' was completed about six weeks later. After a week's holiday on a houseboat in the lovely Vale of Kashmir, we four Smiths continued east around the world. We took five weeks for this homeward journey and stopped at Rangoon and Bangkok where M.I.T. Alumni were most helpful. Then to Singapore and Hong Kong. In Manila and Taipei again M.I.T. Alumni were wonderful to us. Our hosts in Japan had each spent a recent year at M.I.T. on research, and their hospitality was 'out of this world.'

"Why was I in India for six months? I was a consultant on industrial (manufacturing) problems to National Council of Applied Economic Research in New Delhi. The invitation came through Tech, and I took my first leave of absence after 15 years on the faculty. Eloise and I made two business trips to South India, and numerous smaller trips in India before our teenagers joined us. Altogether we traveled about 40,000 miles in 1961. We are down off Cloud Nine now, enjoying our colored slides and the memories of the friendliness of M.I.T. Alumni everywhere. Our daughter Priscilla is now a freshman at Pembroke College and Scott is in the class of '63 at Phillips Academy, Andover."

Many thanks for your interesting letter, Prescott. I hope your letter and **Bob Olsen's** last month will bring in a belated account from our proxy, **Leo Beckwith**, of his travels. Both **Wes Loomis** and **Bill Cross** did some travelling that we would like to hear about also. I am also sure very few of the rest of you have been pinned to one spot these past months. Just maybe some of your wives are writing letters to the secretaries right now.

We will look forward to sharing all communications. . . . **Jim Eng**, our capable district secretary from the middle of our Commonwealth, sent in the following from one of the few coeds in our class: "Here is a very interesting letter dated January 15 from our classmate, Professor **Betty Haskins**, who is doing an excellent job in educating many of the teachers in this area: 'I appreciated your including me in with 'the boys' and suggesting that I write a few words for our class notes. The only reason why I did not answer sooner is that I have been at a loss for words. **Jack Orchard's** fine suggestions (for men) did not help and after reading this month's alumni notes I still have no idea what might interest you. I think I'll try a brief summary of my travels and accomplishments. I seem to have swirled through the last 25 odd years in a rather erratic fashion and have little tangible to show for my efforts except a small house up on a small terrace in the Fitchburg Alps. Perhaps I should call my 'property' a soil-conservation project. I have read countless government bulletins and consulted numerous experts only to find that the one suggestion which works is 'plant rocks.' I have lugged umpteen-nine tons of stone up the 89.7° slopes and scattered it all over the place. The neighbors, the wind and the water get little of my precious 'dirt' now but I can't see or use the soil either.'

"After leaving M.I.T., I taught in a girl's school in Albuquerque, N.M., for a number of years. This was quite a change from M.I.T. in every way. Even the 'dogs' at the school were lady dogs. Outside of school, cowboys, archaeology, and Indians were quite interesting, in that order. A 'thing' called 'The Sandia Corporation' now hides out in what were our school buildings. I suppose human beings work there, but my old haunts are enclosed by barbed wire so I am not sure as to what goes on where the jackrabbit, school girls, and sheep used to roam. Then after various zigs and zags I enlisted in the Army and did various odd jobs such as dining room orderly, electric load dispatcher (Huntsville Arsenal), aeronautical engineer (Washington—we could have lost the war on that one), photographic interpreter (England with an RAF unit), and very briefly, information and education officer (Germany).

"After getting out of that, I decided I wanted a nice quiet job teaching mathematics and so I am now at the State College at Fitchburg. Mathematics teaching is in such an uproar right now this is hardly the quiet rut I was looking for but I have been here 14 years now and I am as contented as the human condition permits. Well, you should have known enough not to let a woman get started talking. Somebody will have to do some cutting here. Why can't you and your family visit me on one of your trips to Fitchburg? I'd love to meet the girls."

Thanks to you, Betty, for writing and as you can see, there was no cutting. Your remarks about the Sandia area should inspire still another letter from **Lou Pflanz** and I am chuckling in anticipation. Here's our Southwest district secretary's latest letter which only points out what a sloppy

job your secretary does on the editing and checking: "Many thanks for sending me the Class of '35 Notes which I perused with interest. However, I violently object to a portion of your page 4 of the February notes in which you quoted the Vice-president and General Manager, **Don Gittens** of the American Bosch Arma Corporation. My objections are based on the following: 1) My name does not have a 'g' in it, and is not spelled 'Pflang.' 2) I am not a lieutenant colonel in the Regular Army, but a full colonel (sometimes of scotch). 3) I am not in the Signal Corps at Sandia Base but am in the Atomic Energy Research and Development program in the Defense Atomic Support Agency. Aside to Don Gittens: thanks just the same Don, but how about reading my annual Christmas message on the back of my Christmas cards.

"In keeping up with the Department of Defense interest in Atomic Energy, Nuclear Tests, the SHERWOOD program, PLOWSHARE program, PLUTO program, and the ROVER Report, I occasionally come across names of some of our classmates who have either contributed to the program or who have attended conferences. Unfortunately, it is not until my liaison officers return and I read their trip reports that I discover who from the Class of 1935 have attended, or else I would send my personal regards to you all through my liaison officer. Being regional secretary for the sparse Southwest leaves me void of any other news to relate because it appears I am the one and loneliest representative in this area. However, now that the nuclear test programs have resumed and this Albuquerque area is becoming a focal point, it might be that we can expect some visitors from the Class of '35 who have business to transact with either the Defense Atomic Support Agency, the Sandia Corporation, Air Force Special Weapons Center, or Naval Weapons Evaluation Facility. If so, be sure to drop me a line ahead of time so I can make proper arrangements to wine and dine you all. If any of your business associates or subordinates come this way, no doubt I could be of some aid and assistance in their business transactions, so drop me a line."

The latest batch of address changes includes some long distance moves on the part of some of our classmates: **Henry J. Ogorzaly** is now at 30 Tulip Street, Summit, N.J., after many years in Paris; **Earle Megathlin**, formerly purchasing agent at Raytheon, North Dighton, Mass., is now associated with Electronic Communications, Inc., St. Petersburg, Fla.; **Alfred McDonald**, 331 Loyola Drive, Millbrae, Calif., moved from Wollaston, Mass.; Dr. **George S. Bays, Jr.**, formerly of Coral Gables, Fla., is now associated with Atlantic Union Oil Company, Ltd., Box 4047, Sidney, New South Wales, Australia; Captain **Robert E. Perkins**, formerly of Seattle, is now at 208 South Summit Avenue, Prescott, Ariz. Each of you mentioned above is invited to send a note telling us about news behind the change.

Other news from here and there: Leo Beckwith reported the class total for the Second Century Fund in mid-January stood at \$482,000, a very respectable

amount indeed. . . . **Dr. David B. Langmuir**, Associate Director of the Thompson-Ramo-Wooldridge Space Technology Physical Research Division, has been elected a fellow of the Institute of Radio Engineers. . . . **Benjamin F. Schlimme, Jr.**, who received his masters' degree with us, has been named assistant general manager of DuPont's Industrial and Biochemical Department. . . . **Elmer D. Szantay** is back on the job as our mid-western regional secretary after a business enforced temporary layoff. . . . **Max Wasserman** has formed a new company to be active in the fields of real estate development, building construction, and manufacturing. His Wasco Chemical Company was sold to American Cyanamid last year. . . . **Edward E. Helwith** is a power engineer with the New York State Power Authority and lives at 747 Hempstead Avenue, West Hempstead, Long Island, N.Y. . . . **Isaac H. Munro** is vice-president of the Allied Chemical Corporation and lives in Port Washington, N.Y.

Any '35ers who attended the 14th Annual M.I.T. Fiesta in Mexico City, March 15 and 17 are hereby invited to write in personal reports of their visit. To the rest of you readers: is your wife going to write that letter for you?—**Allan Q. Mowatt**, Secretary, 11 Castle Rd., Lexington 73, Mass.; Regional Secretaries: **Edward C. Edgar**, Kerry Lane, Chappaqua, N.Y.; **Hal L. Bemis**, 510 Avonwood Road, Haverford, Pa.; **Elmer D. Szantay**, 6130 North Kilbourne Avenue, Chicago 16, Ill.; and **Gerald C. Rich**, 673 Rosita Avenue, Los Altos, Calif.

## '36

A note from **Felix S. Klock** tells us that his son Peter is a member of the freshman class at the Institute. Peter's mother is the former Nancy Overton, '37. Where else could Peter go? Our news this month otherwise seems to be concerned with class members who received graduate degrees with us. . . . **Howard S. Turner**, Vice-president, research and development, Jones and Laughlin Steel Corporation, Pittsburgh, has been appointed to the Visiting Committee for the Department of Chemical Engineering at Carnegie Institute of Technology. Howard received an A.B. from Swarthmore and a Ph.D. with us. . . . **Randal M. Robertson** who also received his doctorate with us has been appointed associate director, research of the National Science Foundation. He has been with NSF since 1958 as assistant director for mathematical, physical and engineering sciences and previous to that he had been associated with the Office of Naval Research, the M.I.T. Radiation Laboratory and the Norton Company. . . . **Ralph L. Dockendorff** has been promoted to division engineer in the Butyl, Butadiene and Solvents Department of Process Technical Division at Humble Oil and Refining Company's Baytown, Texas, refinery. He has a B.S. from Tufts and an Sc.D. from the Institute. He has a wife and daughter and is choir director at Trinity Episcopal

Church in Baytown. This morning I shoveled snow and it seems hard to believe that when you read this the crocuses will be up, I hope!—**Alice H. Kimball**, Secretary, 20 Everett Avenue, Winchester, Mass.

## '37

The 25th Reunion committee has sent out numerous mailings to all the class and from all indications we are going to have a well-planned and well-attended reunion. The class book is just about ready to go to the printers. This is your last opportunity to send us your biographic data questionnaire with your photo and still have it included in the book. As you know, all those who send in this data will receive a free copy of the reunion class book. This offer holds even if you cannot attend the reunion. Mail the data to your secretary, and if you need another form, send him a note.

... **Wells Coleman**, is the chief gear analyst for the Gleason Works, Rochester, N.Y. Wells recently received the Society of Automotive Engineer's Eighth L.

Ray Buckendale Lecture Award in Detroit. ... **Sam Noddleman** is vice-president of the B. A. Wesche Electric Company, Inc., Blue Ash, Ohio. He was on the product design and engineering staffs of the Delco Division of General Motors and Standard Electric Company and on the research staff of M.I.T.'s Radiation Laboratory before joining Wesche in 1955. ... **Charles E. Reed** has recently been elected a vice-president of the General Electric Company. Charlie is the general manager of the chemical and metallurgical division in Bridgeport, Conn. ... **Al Hall** has been named head of a new space systems division which has been established by the Martin Marietta Aerospace Division. ... **James McCormack**, Vice-president of the Institute, is serving as one of the directors of the Geophysics Corporation of America. ... **Eric O. Moorehead** has dissolved the partnership of Smith and Moorehead and is in business himself as consulting structural engineer, 709 Mission Street, San Francisco, Calif.—

**Robert H. Thorson**, Secretary, 506 Riverside Avenue, Medford, Mass.; Professor **S. Curtis Powell**, Assistant Secretary, Room 5-323, M.I.T., Cambridge 39, Mass.; **Jerome Salny**, Assistant Secretary, Egbert Hill, Morristown, N.J.

## '38

I recently had an opportunity to return to New York and Cambridge for a brief visit. While in New York, I had an enjoyable lunch at the M.I.T. Club with **Bert Grossfigner**. Bert still travels as much as ever and was recovering from a case of frostbite incurred on a trip to Canada. ... Upon my return I had an interesting letter from **Norm Bedford** whom I quote in part: "I am still president of the Beckwith Elevator Company, Inc. and each year we expand a little more and take

on new responsibilities. As an added duty this year I am president of the National Association of Elevator Contractors (NAEC), an association of over 145 elevator companies and associate members located throughout the United States, Canada and the Philippines. Shortly, it will expand into other countries throughout the world. This is a fast growing organization that has been of tremendous help to the smaller, independent elevator companies. We hold a convention once a year, and this year's convention will be held in Quebec City, Canada, in September. This will, indeed, be a busy time for me. I have been a director of this organization for two years prior to being elected president. In addition to the above, I have been a director of the National Elevator Manufacturers Industry (NEMI) for the past four years. This organization is made up of the major elevator manufacturers in the United States and has been a major factor in promoting elevator safety codes, industry standards, and the setting up of a standard labor agreement with the International Union of Elevator Constructors."

—**David E. Acker**, Secretary, Arthur D. Little, Inc., 1424 Fourth Street, Santa Monica, Calif.

## '39

Here is a condensation from a fine three-page letter by **Morris E. Nicholson**, XIX, (with apologies to Morrie for not having gotten this material into earlier notes). In 1955 he left the Institute of the Study of Metals at the University of Chicago (as an assistant professor) to go to the University of Minnesota as professor and head of the Department of Metallurgy. "I am supposed to act pretty much as Mr. Metallurgy in the state of Minnesota. In this sense I use the word metallurgy to mean physical metallurgy, and I eliminate from this definition the mining and extraction of iron ores. We have a small department of five faculty; each of us carries on a good deal of contract research for the federal government, in non-objective, fundamental areas of metal physics." Morrie went on to list several other professional activities: recent chairmanship of the local chapter of the American Society For Metals; chairman of the Committee on Education for the Metallurgical Society of AIME; member of the Development Committee of the ASM; inspector for Metallurgical Curricula for the Metallurgical Society; committee member studying the basic research program of the Department of Defense, and others. In addition, Morrie has continued in Army Reserve activities, is a school board member, scoutmaster, and Little League secretary. Morrie and Norma live in the Falcon Heights section of the twin cities area, at 1776 North Pascal Avenue, St. Paul 13. Their three boys are Morris 3d, 17, Robert, 14, and Richard, 8.

**Peter M. Bernays**, V, wrote of a recent promotion to assistant to the director of research, for the Chemical Abstracts Service of Ohio State University, in Columbus. "Chemical Abstracts," and its indexes, is an information service for chemists and

the chemical industry; a footnote on Pete's CA letterhead refers to the Service as "The American Chemical Society's Key To The World's Chemical Literature." After finishing at M.I.T. in '39, Pete obtained his master's and doctorate at the University of Illinois, in 1940 and 1942. After four years with the Chemical Warfare Service—including marrying an Army nurse, Marie Rasmussen—he taught at Illinois Institute of Technology in Chicago and later at Southwestern Louisiana Institute, in Lafayette. He joined CA in 1954. Pete and Marie have three children, Linda, 10, and Sally and Michael, 6. They live across from the school (no commuting problems for Pete) and enjoy various activities such as the Ohio National Guard, Camp Fire Girls, and Y Indian Guides. Pete's professional work includes responsibility for general administration of the research department, and work as manuscript and proof editor.

Dr. **Rodolfo M. Soria**, VI, Vice-president, Research and Engineering, Amphenol-Borg Electronics Corporation, of Broadview, Ill., has recently been elected a director of the corporation. Dr. Soria is a fellow of the Institute of Radio Engineers, is a member of the National I.R.E. Administrative Committee on Engineering Management and on Component Parts, and is a past president of the National Electronics Conference. He and Faith with their three children, Steven, 11, Karen, 9, and David, 6 months, live at 5028 Fair Elms Avenue, Western Springs, Ill. ... Dr. **Charles E. Winters**, X-A (Grad) has been appointed by Union Carbide Corporation as manager of the UCC refractory metals advanced developments project, with responsibility for the development of new manufacturing and forming techniques using ductile refractory metals. Dr. Winters' project headquarters is at the UCC Advanced Developments Department in Parma, Ohio; formerly he was stationed at Oak Ridge, where he was assistant director of the Oak Ridge National Laboratory, operated by Union Carbide for the U. S. Atomic Commission. In that activity, he was director of the project which designed and built the U. S. Demonstration Reactor for the first International "Atoms For Peace" Conference held in Geneva, Switzerland, in 1955. Dr. Winters received his B.S. from Kansas State in '37, his master's from M.I.T. in '39, and his doctorate in chemical engineering in '42, also from the Institute.

Herbert F. Stewart, VI-A, formerly president of the Reed Manufacturing Company, Waltham, Mass., a precision machine and instrument manufacturer, has moved to the presidency of the Invac Corporation, 14 Huron Drive, East Natick, Mass., coincident with the purchase by Invac of the Reed Corporation. Invac manufactures punched paper tape equipment. Plans are being made to consolidate the operations of Invac and its new subsidiary into one location. ... Two '39ers are among the 150 participants in the 41st session of the Advanced Management Program at the Harvard Business School, running from February 18 to May 18. C. Arthur Zeldin, III, is one of the M.I.T. pair; he is refinery plant superintendent,

Utah Copper Division, Kenecott Copper Corporation. The other classmate is **Frederic A. L. Holloway**, X (Grad), who is assistant general manager, Manufacturing Department, Esso Standard Division of the Humble Oil and Refining Company. Fred's home address is 45 Druid Hill Road, Summit, N.J., and Art lives at 2048 Emerson Avenue, Magna, Utah. . . . A brief note from the General Motors Engineering Journal indicates that **Irwin K. Weiss**, II, is one of five co-inventors in patent 2,978,253 for an independent front wheel suspension caster and camber adjusting means. Ike is an assistant staff engineer for the Chevrolet Motor Division of GMC, at Warren, Mich. . . . **Harry Wexler**, XVI (Grad), whose name has appeared here at least twice in recent months, shows up again as serving on the meteorology panel of the Aerospace Engineering Magazine. And another '39er is also serving as a panel member of the same magazine: **Walter J. Mykytow**, also XVI (Grad). Harry is director of research, U. S. Weather Bureau, in Washington, D.C., and Walt is branch chief, Wright Patterson Air Force Base, in Ohio.—**Oswald Stewart**, Secretary, 31 Birch Road, Darien, Conn.

## '40

**Kingsbury T. Jackson** has been promoted to lieutenant colonel and is now with the U.S. Army Ordnance Missile Command Engineering Division at the Redstone Arsenal in Alabama. . . . **Karl L. Fettters** has been elected president of the Metallurgical Society of the American Institute of Mining, Metallurgical, and Petroleum Engineers. Karl is also vice-president in charge of research and development of the Youngstown Sheet and Tool Company. . . . **Herbert G. Weiss** of Lincoln Laboratory discussed "Design of Radar Astronomy Instruments" at the Northeast Electronics Research and Engineering Meeting of the Institute of Radio Engineers held in Boston last November.

. . . Don't forget to contribute to the Alumni Fund in preparation for our 25th Reunion Gift.—**Alvin Guttag**, Secretary, Cushman, Darby and Cushman, American Security Building, Washington 5, D.C.; **Samuel A. Goldblith**, Assistant Secretary, Department of Food Technology, M.I.T., Cambridge 39, Mass.

## '41

If you were sad to see the void in the Class of '41 news column for the last two issues of The Review, please realize that it is of your own making for you have not been sending in the needed clippings and other reports on your activities. This is your column, so please don't hesitate to send in any and all items which might interest the rest of the class. . . . The hardy Greater Boston members braved the Valentine's Day blizzard to attend a fruitful Mid-Winter Dinner-Meeting at the Faculty Club on Memorial Drive, Cambridge. We were pleased to have **Donald A. Howard** of Sherbrooke, Quebec, Canada, in attendance. As usual, the ladies added a desirable touch of refinement to the gathering. Professor Francis Friedman, Director of the Science Teaching Center at M.I.T., presented a most illuminating demonstration of the new teaching techniques in high school physics pioneered by the Physical Science Study Committee of M.I.T. and generally referred to as the P.S.S.C. Physics Course. A vote of thanks is due to the Mid-Winter Meeting Chairman, **John H. MacLeod, Jr.** for his fine arrangements and program selection. Those who braved the storm to enjoy the meeting were: David Howard, Donald Howard, Mr. and Mrs. Frank L. Johnson, Walter J. Kreske, Mr. and Mrs. John H. MacLeod, Jr., Mr. and Mrs. Mitchell J. Marcus, Edward R. Marden, John Sexton, Mr. and Mrs. Charles Sauer, Mr. and Mrs. Irving Stein.

We are happy to see **Teddy F. Walkowicz** in the news again. He is serving as one of the directors of the Geophysics

Corporation of America. Teddy is associated with Laurence S. Rockefeller. . . . **William C. Brown**, Division Associate Director of Engineering at the Raytheon Burlington, Mass., plant, represented the class at the Northeast Electronics Research and Engineering Meeting sponsored by Boston, Connecticut and Western Massachusetts Sections, Institute of Radio Engineers, at the Commonwealth Armory and Hotel Somerset, Boston, November 14-16. Bill took part in a discussion on "The Cross Field Approach to Microwave Superpower". . . . **Nathan R. Owen**, a general partner in J. H. Whitney and Company, New York, a private investment company, has been elected chairman of the board of directors of General Railway Signal Company, Rochester, N.Y. General Railway Signal Company, a multiplant operation, designs and manufactures rail, air and vehicular traffic control systems.

**Luke S. Hayden**, President of the City Savings Bank of Pittsfield, Mass., has been appointed chairman of the annual Catholic Youth Center membership campaign. The campaign commenced in the latter part of January. Luke, a native of Brooklyn, N.Y., was formerly associated in 1959 with the Syracuse (N.Y.) Savings Bank as vice-president. He attended New York City schools and Brooklyn Preparatory School and received his B.S. degree in business and engineering administration from M.I.T. He also holds a master of business administration degree from Syracuse University and has completed the investments course in the Graduate School of Banking at Rutgers University. He was in the U.S. Naval Reserve during World War II, stationed at Boston Naval Shipyard as construction officer and later as assistant progress officer. He is married to the former Dorothy M. Karb of Great Neck, L.I. They have four children, Suzanne, Patricia, Mary Eileen and Luke III. . . . **Robert S. Lundberg**, formerly of Belmont, Mass., was made a partner in the firm of Voorhees Walker Smith and Haines, one of New York's oldest architectural firms. The firm is widely



Members of the Class of '41 braved the Valentine's Day storm to attend the mid-winter meeting at the Faculty Club.

Professor Francis L. Friedman, '49, (standing, far right) spoke on new techniques for teaching high school physics.

known as architects for hospitals, research laboratories, telephone buildings, schools, universities, office buildings and libraries. Bob joined its staff in 1948 after four years in the U.S. Navy as a lieutenant, nearly three of them on wartime duty in the Pacific. He was graduated from Belmont High School in 1933 and received a degree in architecture from M.I.T. He became an associate of the New York firm in 1960. A registered architect, he has been project manager on many of the firm's projects, among them the Washington Headquarters of the U.S. Atomic Energy Commission and the Columbia University Engineering Center. Active in civic affairs in Ardsley, N.Y., he has served as president and trustee of the Board of Education and as a member of the Zoning Board.

**William L. Fader, Jr.** has been made general manager of operations in U.S. Steel's National Tube Division. Bill had been general superintendent of National Tube's Lorain (Ohio) Works. He is a native of Pittsburgh, attended Lehigh University, was graduated from the University of Michigan and received his master's degree in engineering from M.I.T. He joined National Tube at Christy Park Works, McKeesport, Pa., in 1950 and rose to general superintendent of that plant, later becoming assistant general superintendent of National Works. . . . **Peter Horton** has been appointed director of plans for the Missile and Space Systems Division of the Douglas Aircraft Company. As director of plans, Peter will be responsible for staff activities in long range planning as well as the study of general economic and business problems. He was a combat pilot in command of an A-20 squadron in World War II and served on 52 missions. After the war he worked for the M.I.T. Supersonic Laboratory as an aeronautical engineer on guidance and control systems. During the Korean War he served in the office of the Deputy Chief of Staff for Development, Headquarters, USAF. He joined the Douglas Company in 1954 in the Military Sales Department, where he was in charge of the Combat Systems Group. . . . Information for insertion in this column should be sent to any one of the following;—**Walter J. Kreske**, Secretary, 53 State Street, Boston, Mass.; **Henry Avery**, Assistant Secretary, 169 Mohawk Drive, Pittsburgh 28, Pa.; **Everett R. Ackerson**, Assistant Secretary, 16 Vernon Street, South Braintree 85, Mass.

## '42

Remember Reunion, June 8-10, 1962, Mayflower Hotel, Plymouth, Mass.—**Lou Rosenblum**, Secretary, 24 Cedar Road, Belmont 78, Mass.; Assistant Secretaries, **J. J. Quinn**, **Ed Edmunds**, **Bob Keating**.

## '43

"Thank heaven for little girls" is the song most frequently heard around the **Verrochi** home these days, as per this

fine letter I received last month from Bill's wife, Gloria: "I'll drop a note for Bill. I'm sure he will get around to writing. Much has happened to us. We are now living in Johnstown, Pa. Our new home address: Box 355, R.D. 5, Fender Lane. We'd love to see you. We had our fourth child and daughter this August. Bill has joined Penelec as superintendent of production, and we hope to settle down for a while. If this sounds incoherent it's because I'm in the hospital waiting for my two oldest daughters to come down from having tonsillectomies." . . . I also received a card from Pat **Anderson**, who wrote that she and the children are fine and adjusting slowly to their situation. . . . At the last reunion, many on the distaff side told me they enjoy reading these notes, and threatened to write. The wives, as per the first paragraph, are cordially invited to contribute, because it is becoming apparent that you guys are too busy. But you won't be too busy to rejoice in the news that through the efforts of our ever vigilant class president, **Jim Hoey**, we have engaged the Mayflower Hotel in Plymouth, Mass., for our 20th Reunion, June 7 to 9, 1963. Many of you will recall the ball we had there on our 10th. We will again have exclusive use of the beautiful Shore Club, and it is beginning to shape up into a gala affair. That's 14 months from now.

**Dick Adler** was the speaker at the December meeting of the A.I.E.E.-I.R.E. M.I.T. Student Branch, on the subject of "Electromagnetism and Reality." He is in the Department of Electrical Engineering. . . . **A. Joseph Mestier, Jr.** has been appointed manager of sales, Industrial Systems Department of Allis-Chalmers. He joined them in 1946, and during the past six years has been manager of their Detroit sales district. . . . We regret to announce that **Edwin C. Perkins**, who received his master's degree with our class, passed away last June. His residence was Johnson City, Tenn. —**Richard M. Feingold**, Secretary, 10 North Main Street, West Hartford 7, Conn.

## 2-'44

A very nice letter from Calabasas, Calif., authored by **Bob Copsey**, XV, reports that he has been very active in the M.I.T. Club of Los Angeles, ending up as treasurer. He says the club is definitely solvent, and he should know. He runs into **T. Gary Loomis**, XV, at all the meetings, since Gary is the president of the club. Bob has talked to **Vic Stanley**, II, and **Al Markus**, XV, in connection with the Second Century Fund. His only report is that Vic and Al are very busy of late. **Sten Hammarstrom**, II, who is district manager for Republic Flow Meters in San Francisco, paid a visit to one of the meetings of the Los Angeles Club. Sten has recently moved out to the West Coast from Cincinnati. **Harry Myers**, XVI, who is a vice-president of Aerojet General, has attended several meetings of the club. Bob Copsey ends his letter by pointing out that he claims the title as

the only member of the class to own a quarter horse. He further suggests that any one owning any other fraction of a horse should contact him through the notes. Bob also suggests that the notes be a clearing house for other 'insignificant' accomplishments of the class members so they may be given the proper treatment for posterity.

A note in the Hartford, Conn., Courant indicates that **Harlan D. Taylor**, XVI, has been named as manager of the physics department of United Aircraft Research Labs, in Hartford. Harlan has been with United Aircraft since '46, and presently lives in Manchester, Conn. . . . A note from the Institute indicates that **Bill West**, VIII, had attended the Northeast Electronics Research and Engineering Meeting in Boston as a representative of Autonetics in Downey, Calif. Bill was a panel member in a discussion on 'Design Considerations for Reliable Electronic Equipment.' Next time you are East Bill, why don't you give me a call, and bring me up to date on your doings and those of some of the other members of the class around Downey? . . . Received a nice note from **Caesar A. Spero**, II, indicating that he had been promoted to head of the Development Department of the U. S. Naval Underwater Ordnance Station at Portsmouth, R.I. Caesar has been with the Ordnance Station for the last 10 years, and he and his wife Rita and their three children live in Portsmouth. . . . I was down in New York last week and called **King Cayce's**, II, office, but was advised that he was in Europe, and wouldn't be back till about the middle of the month. I hope that I will be able to get in touch with him before the next notes, and publish the news as released. . . . As a result of a couple of notes received from **Lang Flowers**, XVI, President of our class and **John Hull**, XVI, President of 10-'44, it appears that some of my writings in prior class notes regarding the merger of the classes may become a reality. As I hear the developments, I shall keep you advised!—**Paul M. Heilman**, Secretary, Reflectone Electronics, Inc., West Main Street, Stamford, Conn.

## '46

A few years ago I passed along in these columns some interesting home gardening advice I had received from one of my most interesting and amusing M.I.T. Alumni correspondents, **John K. Pollard, Jr.** His suggestion was to use black polyethylene film to cover the garden, plant in small holes in the film, and sit back and enjoy life. I don't know how many of our millions of readers followed his advice, but I can report that from then on my own tomato crop has been most bountiful, and I have forgotten what it is to pull weeds. John has recently moved on from his agricultural advisory location, on the faculty at Cornell, and is now sporting the title of director of technical public relations at the California Corporation for Biochemical Research. John has thoughtfully put me on the mailing list for his publication. Being a rather dense

# '48

Bravos to the Class of '48! You can imagine my surprise when the weighty envelope arrived containing abundant and interesting news of the recent doings of our classmates. Many thanks to you for making this issue of the class notes truly newsworthy. An unusual and native Christmas card tells us that the **Robert R. Ferens**' are spending their second year in Ghana, where they expect to be until July, 1962. Bob is on leave from the University of Oregon and is resident architect for Kaiser Engineers on the Volta River Project. . . . Regarding recent promotions and appointments, **Walter S. Bertaux** has been named manager of the MF 295 Project with General Electric in Elyria, Ohio. He will direct all Large Jet Department efforts on the MF 295 engine prior to the awarding of an actual contract for the engine. He will be the company's principal representative to the customers and airframe manufacturers organizations concerned. . . . **Lynwood O. Eikrem**, nationally known spectroscopist, has been named manager of product development for the Davis W. Mann Company, a division of the Geophysics Corporation of America in Bedford, Mass. He will be responsible for broadening the Mann Company's traditional products and skills into the fields of transistor production, spectroscopy, densitometry, interferometry and metrology. . . . **Robert M. Murray** has been appointed division head for urethane development for DuPont's Elastomer Chemicals Department, at its Chestnut Run laboratory near Wilmington, Del. . . . Standard-Thompson Corporation of Waltham, Mass., manufacturer of temperature control components, announced recently that **Backman Wong** has been appointed senior engineer of its automotive division. He will supervise special projects in the engineering and development department.

and now somewhat ancient electrical engineer, I find it difficult to understand the difference between mannitol dihydrochloride and amino-L-phenylalanine, but the humor which accompanies the soft sell in his publications makes it all interesting reading. For those in our audience who might be interested in the biochemicals he is selling, I recommend getting on his mailing list. John now lives at 1428 Ontario Avenue, Pasadena, Calif.

**Thomas F. Malone** is chairman of the meteorology panel of the Aerospace Technology Panels for Aerospace Engineering Magazine. . . . **Harry A. Augenblick** is president of Microlab, a firm in Livingston, N.J., engaged in microwave component manufacturing. . . . **Neil E. Harkleroad**, Captain, USN Retired, has recently left his position as technical director and manager of the David Taylor Model Basin in Washington to join Aerojet-General Corporation Advanced Development Division as special assistant. He will be responsible for the planning and development phase of Aerojet's Ultra-Large Booster program. . . . **David F. Moyer**'s new address is 28 Arbutus Avenue, Chelmsford, Mass. He moved from Ohio to good old New England to join the Mitre Corporation. . . . **Keith P. Lanneau** is president of Micro-Tek Instruments, Inc., located in Baton Rouge, La. Keith has also recently been named governor of the Greater Baton Rouge Area Chapter of the Society for Advancement of Management. . . . After his freshman year with us, down wind from the soap factory, **Carlton A. K. McDonald** sailed off to the Naval Academy, from which he graduated in 1948. He is now a commander in the subs, stationed in Hawaii, and makes his home in Kailua on the island of Oahu. . . . An article in the Sunday supplement of a recent issue of the St. Louis Post-Dispatch gave a very interesting account of the methods and accomplishments of **Robert B. Davis** in his new approach to teaching mathematics to grade school children. We reported a year or more ago on the program Bob had developed for mathematics teaching while at Syracuse University, and now he is in St. Louis teaching his methods to student teachers at Webster College. He also sallies forth on occasion to local elementary schools to practice what he preaches, and the article mentioned above tells of a day with some fifth graders during which he was able to enlist their eager attention during the regular period plus overtime in the study of the elements of quadratic equations, a subject reserved for the ninth or higher grades in more conventional curriculums. I wish he would come to my daughter's school and stir things up a bit. . . . With the exception of a few of the notes above and an appreciated letter from **Bill Schield** welcoming the Maynards to the Midwest, the cacophony of silence in the past few months has given the old eye balls a fine rest, but the file for future news reporting can now be stored in the cavity of a martini olive. Your immediate action to correct this situation will be appreciated. —**John A. Maynard**, Secretary, 25 Pheasant Lane, North Oaks, St. Paul 10, Minn.

Soap Company. . . . **Bill Hosley** is president of Vino Corporation, and he is now on a six month temporary assignment with a committee set up to suggest new products for manufacture by Kodak. In his spare time, Bill sails his new "Thistle" on Lake Canandaigua, N.Y. . . . **Bill Virtue** is working in the field of cryogenic pumps.

In the military field, **John F. Brady** has been promoted to the position of head of the Applied Science Department for the U.S. Naval Underwater Ordnance Station in Newport, R.I., where he has been since July, 1950. . . . **Ned Eacker** reports that he was promoted to lieutenant commander in the Naval Reserve, although he is still a civilian. . . . **Gordon H. Pettingill** delivered a talk entitled "Radar Echoes From Venus" before a recent meeting of the Professional Group on Antennas and Propagation, in Cambridge. He reports that radar echoes from the planet Venus have been successfully obtained by the Millstone Radar of M.I.T. Lincoln Laboratory, where Dr. Pettingill has been engaged in research in radio physics. . . . **Roy Mellen** had an article in the American Journal of Physics in July, 1961, entitled "Flying Umbrella". . . . **Dean S. Ammer**'s new book (title unknown) has been published about a year behind schedule. He has written two articles for the Harvard Business Review, one in May, 1961 and one in January, 1962. . . . Your class secretaries join me in sending you the happiest of Easter greetings.—**Richard H. Harris**, Secretary, 26 South Street, Grafton, Mass.; **Harry G. Jones**, Assistant Secretary, 94 Oregon Avenue, Bronxville, N.Y.; **Herbert S. Kindler**, Assistant Secretary, 128 Elatan Drive, Pittsburgh 16, Pa.; **Robert R. Mott**, Assistant Secretary, Box 113, Hebron, Maine.

# '50

This is the way to live! It looks like I'm going to have the easiest secretarial job of any class at M.I.T. since the news is starting to pour in. I hope that all of you who are reading the notes right now will send me a commentary about yourself. I am looking forward to hearing from all of you; henceforth, I hope to have the opportunity to see a few of you fellows for lunch when you are in New York City. . . . **Don Walker** is now manager of AFSD Advanced Re-entry Vehicle Programs at Avco, and in this capacity has had a couple of contacts with Bill Wilson, '49. Bill and Don apparently presented divergent ideas concerning new missiles at a meeting in Washington, D. C., and again at a meeting in Los Angeles. Don states that Bill was a "formidable opponent." Bill is with the General Electric Missile and Space Vehicle Department. Don also presented a paper on re-entry vehicles at the AMRAC meeting in Colorado Springs last April. He was also on a five-day Boston TV series designed to tell the public about re-entry from space; and he presented a seminar at M.I.T. last spring. Don has seen quite a few of the brothers

in the last year, including Wilson, Ferguson, Simpson, Bakemeyer, and all of the local Boston MITATO'S who are members of the Technology Building Corporation. . . . **Bud Simpson** visited Boston last fall. He got entangled in the election eve traffic jam created by Kennedy supporters, and then spent election day evening having dinner with the Kerwines and Walkers. He also visited the house, and reports that the fraternity had the second highest number of boys from the La Crosse area. He also had the honor of representing President Stratton at Founders' Day ceremonies at Luther College on October 14. . . . **Don Starner** writes that life at his house is kind of like the summer re-runs on TV. Same wife, children, pets, job, house, car, etc., and as a result, no news!

**Bill Bakemeyer** has a new position as of May, 1961, as assistant manager of advanced program development. This is in the Space and Ballistic Missile Defense Systems Division at Hughes Aircraft Corporation. Bill likes his new work very much; he has been kept so busy that he has not had time for a vacation. . . . **Nort Belknap** is soon to move to Japan to help in a Far Eastern reorganization of the Standard Oil Company. His current position is assistant regional co-ordinator for Far East, East, and South Africa. He has been working for sometime on the reorganization of Standard Vacuum, an affiliate jointly owned by Standard Oil and Socony-Vacuum, which is being split in two separate pieces. In Japan, Standard Oil is forming a new company to be called Esso Standard Sekiyu Kabushiki Kaisha (Esso Standard Oil, Ltd.). In this new company, Nort will be a director and vice-president for manufacturing and supply. He and Mary spent about three weeks in Japan last summer, and liked it very much, but did not know they were to move at the time. Meanwhile Nort is trying to teach the children Japanese. . . . **Milt Rand** has moved into his new house. He reports that he has seen Bill Bakemeyer at McDonald on several occasions, due to the fact that McDonald and Hughes Aircraft have a joint proposal for the Apollo Project. . . . **Bob Kovacs** reports that they are expecting a new addition to their family and after two boys, they are hoping for a girl. . . . **Lloyd Keefe** is planning director for the City of Portland, Ore.—a position he has held since 1952, except for a period as executive secretary of Downtown Portland, Inc. He previously served as planning director in Toledo-Lucas County, Ohio, and Rockford, Ill.

Born to Mr. and Mrs. **Paul L. Cumings, Jr.** on January 17, a first child, Paul L. Cumings, 3d, in New York City. Paul is cost engineer for the engineering firm of the Frederick Snare Corporation of New York City. . . . Now to report a change of address for **Ray Dyba**; also this might be a good occasion to report briefly on the first decade or so after Ray's graduation from M.I.T. From M.I.T., Ray went to graduate school at Yale University where he received an M.S. in 1951 and Ph.D. in 1954, and where his son, Jack, was born in 1953. From 1954 up to De-

ember he worked as a research physicist at DuPont's Photo Products Research Lab at Parlin, New Jersey. In 1957 he moved into the house at Lake Nelson which they have just left, and in 1959 their daughter, Martha, was born. In December Ray was transferred to DuPont's Film Department Research Lab at the experimental station in Wilmington. . . . Here is a listing of the '50 graduates who have recently moved: **George A. Basta, Jr.**, 2527 Olympia Drive, Bettendorf, Ill.; **Edward B. Berninger**, Vultejusvagen 13, Bromma, Sweden; **John B. Chatten**, Philco Research, Union Meeting and Jolly Roads, Blue Bell, Pa.; **Fox Conner**, 9862 Haskill Avenue, Sepulveda, Calif.; **Mrs. Robert E. Day**, 1335 La Granada Drive, Thousand Oaks, Calif.; **George A. Fedde**, 2980 Old Arch Road, Norristown, Pa.; **John M. Frankovitch**, 19 Dewey Road, Lexington, Mass.; **Dr. Gerard D. Galletly**, 1067 Whitney Avenue, Hamden, Conn.; **Jon L. Ganger**, 8 Loring Road, Lexington, Mass.; **Richard A. Gnecco**, 79 Longhill Street, Springfield, Mass.; **Eli I. Goodman**, Westinghouse Electric Corporation, Astronuclear Laboratory, P.O. Box 10864, Pittsburgh, Pa.; Professor **Victor P. Henri**, La Vieille Eglise, Crue de la Pie Voleuse, Palaislau, S et 0, France; **Samuel I. Iwata**, DCS Civil Engineering, HG—17th Air Force, APO 12, New York, N.Y.; **James T. Jensen**, 49 Crescent Street, Weston 93, Mass.; **W. Oliver Kincannon, Jr.**, 1420 North Clayton Street, Wilmington 6, Del.; Dr. **Paul Kruger**, 3770 Wright Place, Palo Alto, Calif.; **George A. Lopez**, Edificio Texaco, Las Palos Grandes, Caracas, Venezuela, S.A.; **Dwight C. Macauley**, 7 Spring Street, Cohasset, Mass.; **Jack E. Seitner**, 6327 Hollywood Boulevard, Sarasota, Fla.; **Henry H. Skillman**, 904 Sheridan Drive, West Chester, Pa.; Dr. **William J. Timson**, 915 "C" Street, Harrisonburg, Va.; **Jules J. Van Deun**, 53 Enslin Road, Needham 92, Mass.; **Charles P. Wurth**, Goodyear S.A., Colmar Berg, Grand Duchy of Luxembourg. . . . Looking forward to hearing from you all soon.—**Gabriel N. Stilian**, Division Manager, Administrative Services Division, American Management Association, 1515 Broadway, New York 36, N.Y.

## '51

**Allan Elston** has been named vice-president for sales administration for the Diversey Corporation in Chicago. Earlier Allan served Diversey in Brazil. . . . **William Ericson** has been appointed materials control manager at the Columbus, Ohio, plant of American Radiator and Standard Sanitary Corp. . . . **William H. Ramsey** is with the Aerospace Communications and Controls Division of RCA in Burlington, Mass. Last fall he organized tours of the Air Traffic Control Center at Logan Airport for the Professional Group on Aerospace and Navigational Electronics. . . . **William R. Clough** has been appointed associate professor of materials engineering at R.P.I. After earning his doctorate in 1954 he was with

Union Carbide Metals in research until 1958 when he became general supervisor of metals research for Pratt and Whitney Aircraft's CANEL Division. . . . **Dick Strauss** moved into the newly created position of director, Operations and Development for National Polychemicals in Wilmington, Mass. Dick joined that company in 1960 as development manager after associations with American Cyanamid and Arthur D. Little. The Wilmington plant manufacturers phenol and urea formaldehyde resins as well as organic chemicals for the rubber and plastic industries.

**Harold J. Cleary, Jr.**, was married to Alice Kellogg last September in the Tufts chapel. Alice is a graduate of Jackson. . . . **John Ross**, who is in the chemistry department at Brown spoke at a January Physical Chemistry Colloquium at M.I.T. on the subject, "Chemical Kinetics and Molecular Beams." . . . In another meeting last fall sponsored by the IRE in Boston our class contributed the services of two discussants. **Dan R. von Recklinghausen** discussed "Design Aspects of FM Stereo-Tuners and Adapters," and **Herbert A. Ullman** took part in a discussion of "The Maximum Efficiency Concept for High-Speed Random-Access Memories." Dan is with H. H. Scott in Maynard, Mass., and Herbert is with Sylvania in Needham, Mass.—**Richard W. Willard**, Secretary, Box 105, Littleton, Mass.; **Forest Monkman**, Assistant Secretary, 46 Lincoln, Hingham, Mass.

## '52

This is being written in the January thaw and is based upon the reunion questionnaires for the most part. Many thanks to those of you who took the time to add notes on the back—it helps. . . . **Dr. Nick Haritatos** has been promoted to group supervisor in the Process and Plant Design Section of the Richmond Laboratory of the California Research Corporation, where he will be responsible for process design and economic analysis for new petrochemical process units. . . . **George Roehr** is assistant to the publisher, of the Atlantic City Press in New Jersey. . . . **Edward W. Neumann, Jr.** is a staff assistant with American Telephone Planning and Reg. Department liaison with associated Bell System Companies and has just moved to Glen Rock, N.J. . . . **Ronald G. Wiegand** is a group leader in Chemical Pharmacology with Abbott Laboratories, North Chicago, Ill., and living in Lake Bluff, Ill. . . . **Jere L. Sanborn** is in Poughkeepsie, N.Y., as a staff engineer in IBM's Data Systems Division developing procedures and programs for system design and logic automation. . . . **Clifford C. Herdman** is with the New York Port Authority as a structural designer, Tunnels and Bridge Design Division, and has just finished heading up the design unit for one phase of the second deck of the George Washington Bridge ramps; he is connected with design work around the Lincoln Tunnel Holland Tunnel, etc., and working on the Narrows Bridge, so when you drive

into New York, you know who has been making it possible. . . . **Bob Roy** is with the same Port of New York Authority as a general planning analyst, co-ordinating Port Authority planning with other agencies and working on zoning and urban renewal problems. Bob mentions his summer camp at Saranac Lake in the Adirondacks and says the fishing is terrific. . . . **Lloyd A. Currie** is an assistant professor at Pennsylvania State, teaching and doing research in nuclear chemistry.

**Dick Heitman** is on the operations research staff of Arthur D. Little in Cambridge. . . . **Paul C. Van Alstyne** is with Control Data Corporation in Woodland Hills, Calif., as a sales engineer of computers for scientific and engineering applications. Incidentally, for Paul's benefit and any others who ask for addresses, the M.I.T. Alumni Office is much better geared and far more up to date than this column on the latest addresses of classmates. I'll write if I have it, but otherwise it's a lot of paper work to dig them out, so write direct to M.I.T. **Hugh G. Robinson** is with United Shoe Machinery Corporation in Beverly as a design engineer; he is working on harmonic drive research and product design while living in Wenham. . . . **Dick Lyle** is out in El Cerrito, Calif., working for California Research Corporation of Richmond as staff assistant to the vice-president and doing general laboratory administration. . . . **Dr. Harold R. Larson** is division dental surgeon, 101st Airborne Division, Fort Campbell, Ky. . . . **Charles A. Stoddard** is in Willoughby, Ohio, as president of Stoddard Imported Cars, Inc. specializing in Porsche, Alfa Romeo, and BMC. . . . **Albert E. Sevcik** has just started up a firm called Travelling Businessman's Club which sounds quiet interesting as a guide and discount plan for those who travel frequently on business. (Get details from Al, 4301 Tennyson Street, Denver 12, Colo.)

**Charles H. Nute, Jr.** is with the Boston U.S. Customs Lab as a chemist and living in Wakefield. . . . **Louis H. Di Bona** is still with National Research Corporation, Equipment Corporation as a sales representative selling vacuum equipment, and is living in Holbrook, Mass. . . . **Sanford Kaplan** is president and treasurer of Sanford Construction Company, Inc. and busily building houses in the Boston area and living in Newton. . . . **Seymour S. Weintraub** is president of Weintraub Company and building apartment houses in the New York area. . . . **Taj F. Hanna** still with DuPont in Brevard, N.C., and is an area supervisor on special assignment in production. . . . **Stanley E. Charm** is an assistant professor of nutrition and food science at M.I.T. . . . **Herbert Paul Kagen** is an associate professor of chemistry at Detroit Institute of Technology living in Livonia, Mich.

And still more classmates in the academic world include: **Darrell A. Frohrib**, professor of mechanical engineering at the University of Minnesota in St. Paul; **Les Case**, assistant professor at Purdue University in Lafayette, Ind.; **Mark J. Beran**, associate professor of mechanical engineering at the University of Pennsylvania, and living in Ardmore; **H. Stuart**

**Muench**, instructor working on his PhD. in the Department of Meteorology and Climatology at the University of Washington in Seattle; **Earl W. Snell**, working on his Ph.D. at Stanford in the Graduate School of Business, majoring in management science and operations research, **Bob Bacastow**, a graduate student at the University of California; and **John F. Clemons** who is assistant to the superintendent of building and grounds at Mount Holyoke in South Hadley. . . . **Larry Krivit** writes he is now engaged in general practice of medicine in Munroe, N.Y. . . . **Arthur I. Auer** became a surgeon in the St. Louis area after finishing residency at the Veterans Administration Hospital in St. Louis. . . . And with that, this column will come to a close until next month.—**Dana M. Ferguson**, Secretary, 242 Great Road, Acton, Mass.

## '53

I am delighted to say that I have received letters from a couple of classmates. Hope more of you will follow suit. . . . **Charlie Homsy** is still living and working at DuPont in Wilmington, Del. However, after two years with the R and D Division of the Polymers Department, he has transferred to the Sales Division as technical representative; his duties involve end-use product research and customer consultations both in the laboratory and in the field. He also noted that he still continues to be concerned with fluorocarbon plastics—specifically, "Teflon," TFE and FEP resins. His family of three is growing and their second child is expected in two months (first is a boy). 'Growth plan' has also resulted in the purchase of a new home. . . . **Fred** and **Sandi Brecher** are still living in the suburbs of Philadelphia, and enjoying their new home and three-year-old daughter. Apparently, Fred has been working a day overtime for almost a year, but finds his work (mainly apartment-building design) most interesting; he spends half his time on design and the other half on field inspection at the job site. He noted that he and Sandi are "anxiously looking forward to the 10th Reunion, and trying to 'drum-up' trade." Finally, he added that **Frank Hartzell** recently started to work at the same firm. . . . We also received a note from **William S. Floyd**, who is living in Southfield, Mich., but working in Detroit. As he put it, he was one of the few to "throw over engineering and continue on to med school." He completed his M.D. in 1957, and has completed both his residency and seven months of private practice as an obstetrician and gynecologist.

**Max Michel** is again serving on the Fiesta Committee for the 14th Annual M.I.T. Fiesta which was held in Mexico City (in mid-March). . . . **Fred Kreitner** has been appointed engineering section head for evaluation and data reduction at Sperry Gyroscope Company in Great Neck, New York. . . . **Stephen Waldron** (who is now with the Operations Evaluation Group of M.I.T.) re-

cently gave a series of seminars to the Department of Naval Architecture and Marine Engineering at M.I.T.; the subject of these talks was "Constraints on Ship Motions—Observation and Analysis of Ocean Wave Spectra." . . . Two of our classmates were on the program of the Northeast Electronics Research and Engineering Meeting (Institute of Radio Engineers) which was held in Boston last fall. **Yu-Chi Ho** (who is employed by Minneapolis-Honeywell) spoke on "Recent Developments in Bang-Bang Control," and **Roy A. Paananen** (with Raytheon) spoke on "Some Properties of a Gaseous Optical Maser." . . . **George J. Michel, Jr.** has been appointed director of manufacturing and purchases by Hancock Telecontrol Corporation, a company which produces systems for centralized management control of factory operations. To this, he worked for Fairbanks Morse Corporation and lived in Chicago; now, living in Stamford, Conn. . . . That is all. Please write.—**Martin Wohl**, Secretary, Room 1-131, M.I.T., Cambridge 39, Mass.

## '54

Our supply of news has dwindled to the point where we have a bare minimum to report this month. I hope that all of you who see this month's column will be moved to send a card or letter to me soon. It will be greatly appreciated by all of us. . . . **Stewart W. Smith** acquired his Ph.D. in geophysics from Cal Tech last spring and is now an assistant professor at that institution. He was recently observed out there giving a special lecture, illustrated with slides, on "Sounds of the Earth." . . . **Charlie Burnham** received his Ph.D. in geology and geophysics from M.I.T. last year, but we have been unable to determine his latest hiding place. . . . **Andy Wendling** is about to receive an M.D. from the University of Maryland. He is waxing enthusiastic about combining his previous training in chemical engineering at Tech with his work in medicine; seems to think he has a good thing going, and his arguments sound convincing. . . . **Al Nutall**, who is working out of Litton Systems, Inc., Waltham, Mass., has been running around attending meetings. He was an active participant, we understand, in the Northeast Electronics Research and Engineering Meeting held in Boston in November. . . . And **Bob Mackintosh** has been promoted from lieutenant to captain. Bob is at the Watertown Arsenal in Watertown, Mass. . . . That's about all we know this month. All contributions to this corner gratefully accepted. (Please don't send cash; just news)—**Edwin G. Eigel, Jr.**, Secretary, 6932 Chippewa Street, St. Louis 9, Mo.

## '55

Back in the Army at Fort Stewart, Ga., is **Ash Stocker**. . . . **Chan Stevens** writes that he too may be leaving his soilbank

farm near Mansfield, Ohio, to meet a similar fate. . . . **Phil Gruber** has returned from a tour of duty in Munich and is now addressed at Shawnee-Mission, Kansas. . . . **Barry Benepe**, moving in the opposite direction, now lives in Newcastle-on-Tyne, England. . . . **Dave Brooks** and his family have settled in Arlington, Va.; and in nearby Fairfax lives **Dale Madden**, who is with Atlantic Research. . . . Both **Hugh Hare** and **Elisha Huggins** have recently moved to Hanover, N. H., the latter having acquired a doctorate, too. It was a treat to hear from **Roberta Walker Potter**, now a certified public accountant in Belmont, Calif. She was married in 1957 to Hugh Potter from Chicago, who is with Litton Industries in electronics although he received a degree in music composition from Chicago Conservatory and Northwestern. If she survives the 1962 tax season, Roberta and Hugh plan a vacation in the east in the summer. . . . Another ex-Atlantan, **Winston Cartledge**, is now in the Department of Physics at the University of Montreal. . . . The bachelor brigade dwindles further: **Paul Lualdi** married Robin Cram of Washington, D. C., in December. He is with Bethlehem Steel in Quincy, Mass., as a marine engineer.

. . . **Stan Barriger** was married to Ruth Forder and spent November, December, and January in South and Central America. He is an industrial engineer with the Missouri Pacific, as of this writing. During his honeymoon, they decided to forego the railroads to take a panel truck sortie across the French Guinea jungle. . . . **Bob Morgan** was wed to Eleanor W. Dye of Dayton, Ohio, in October. She is a graduate of Skidmore and is with Pantheon Books in New York. Bob, who has an M.B.A. from Wharton is with consultants Booz, Allen & Hamilton.

Two notes from IBM tell of the promotions of **Al Brunschweiger** and **Rex Bradford** to development engineers at the Data Systems Division Technical Development Laboratory in Poughkeepsie, N.Y. . . . **George Raymond** has been elected a director of Raymond Engineering Laboratory, Inc., Middletown, Conn. . . . **Sidney Parry** will be teaching metallurgy evenings at the Hartford, Conn., State Technical Institute. He took graduate degrees through the doctorate at Illinois Tech and Iowa State and is a nuclear metallurgist at United Aircraft Company. . . . **Bill Neff** co-authored a paper on ground effect machines in the December 1961 issue of Aerospace Engineering. He is with Booz Allen Applied Research, Inc. in Bethesda, Md. Between Bob Morgan and Bill Neff we see what they mean when they talk about '55 being big on booz—neff said?—Co-Secretaries; **Mrs. J. H. Venarde**, 2401 Brae Road, Arden, Wilmington 3, Del.; **L. Dennis Shapiro**, 15 Linnaean Street, Cambridge 38, Mass.

## '56

Word has been received of the death of **Ronald Hillebrand** of Cincinnati in December. . . . Recent word from **Fred**

and Fritze **Culick** in Pasadena indicates that sunny California also offers excellent skiing in the nearby mountains. . . . **Fred** and Martha **Fahrenholz** announced the arrival of a daughter, Kristine, in December. Fred is at the Naval Supersonics Lab at Tech. . . . **Curt Flory** has been named product manager for Coated Fabrics Division of Interchemical Corporation in Toledo. Since Tech, Curt has spent three years with an oil company and has attended the Harvard Business School. . . . In a recent letter **Walt Frey** aided in information gathering for these notes. **Tom Eggers**, Walt, **Ben Lightfoot**, **Paul Luckett**, and **John Morefield** are members of the Educational Council. . . . In a recent note **Laura Friedman** has brought us up to date on husband **Harold** and family. Harold is a product specialist for industrial metals at the Metal and Controls Division of Texas Instruments in Attleboro. The Friedmans have two sons. . . . **Sigurd Hoyer** conducted a seminar at Tech in January on "An Investigation of Some Gyroscopic Phenomena." . . . **Dean** and Carol **Karnopp** announced the birth of Dean, Jr., recently. Dean was also promoted to assistant professor in the Mechanical Engineering Department in 1961. . . . **Joe Neville** is now a production supervisor at Polaroid. Joe was formerly with Transitron. . . . **Dr. J. Nicholas Newman** conducted a seminar at Tech in December on "Some Hydodynamic Theories of Ship Motion." Nick is with the David Taylor Model Basin in Washington. . . . **Jack Saloma** is working on the staff of the Ways and Means Committee of the House of Representatives. Jack is especially interested in the trade-tariff bill being presented this year. . . . **Regis Schultis** is now in the marketing group for Kynar fluoroplastic at Pennsalt Chemicals. . . . **Daniel J. Wolfson** was the author of an article on building construction in the September 1, 1961, Printers' Ink. Dan is a project manager at Tishman Realty and Construction Company in New York.—**Bruce B. Bredehoft**, Secretary, 1094 Center Street, Newton Center 59, Mass.

## '57

**Don Park** gets his M.S. in Course XV this June. . . . **Dave Wolsk** is manager of export sales of Standard Instrument Company. . . . Captain **Neal Lepasio** is at Fort Sill. . . . **Bill Hooper** is in Lagos, Nigeria, until this June. . . . **Wollsey Kane** has joined the military as a major. . . . **Don W. Smith** is at the Harvard Business School. . . . **Bob Hull** is doing a tour as a lieutenant with the Chemical Corps at Fort McClellan. . . . **Charley Feldman** is a senior project engineer for Joseph Kaye and Company, the research and consulting firm. Charley recently delivered a paper entitled "Theory Disclosed for Determining Fin Area in Thermoelectric Refrigerators" at the St. Louis meeting of the American Society of Heating, Refrigerating and Air-Conditioning Engineers. . . . **Eustratios N. Carabateas** co-authored an article en-

titled "Thermionic Conversion of Heat to Electricity" which appeared in the magazine "Aerospace Engineering." Eustratios earned his Sc.D. in 1959 and is presently an assistant professor of mechanical engineering at M.I.T. . . . **Dr. Melvin J. Glimcher** is director of the Orthopedic Research Laboratories at Massachusetts General Hospital. Dr. Glimcher has recently duplicated in a test tube the calcification of tissue into bonelike material. This research is directed towards solving the mystery of body manufacture of bone. . . . **Dr. John M. Reynolds, 3d**, received his Sc.D. from M.I.T. in mechanical engineering. . . . **Dr. Jacob Shekel** has resigned as chief of the Electronics Division of the Israel Ministry of Defense and joined the development staff of Spencer-Kennedy Laboratories in Boston. . . . **John A. Seeger** was appointed to the Planning Board by the selectmen of the town of Athol, Mass. John is a vice-president of the Stencil and Rivet-O Companies and a vice-president of the Junior Chamber of Commerce.

**Dr. Hans J. Hennecke** is temporarily Lieutenant Hans Hennecke with the Chemical Corps at U.S. Army Chemical Center in Maryland. . . . **Henri B. Smets** received the 1962 Memorial Prize Award of the Institute of Radio Engineers for a paper on the analysis and synthesis of non-linear systems. Since 1957, Henri has served in the Belgian Army, worked at the Belgian Nuclear Center, and presently is in charge of research co-operative actions at the European Nuclear Energy Agency of the O.E.C.D. . . . Among those working for the Second Century Fund in the Greater New York Area are Messrs. Ralph Baron, Richard Bohlen, Solomon Buchsbaum, Richard Carson, Castle Day, Ronald Greenwald, Eldon Hanes, James Havender, Peter Hubbard, Henry Kleinman, W. H. Liepmann, Alan May, Richard Monsen, Donald Peterson, Joseph Roseman and Robert Watts. . . . To **Jack and Sue Safirstein** a son, Elliott Joe Safirstein, was born last September. . . . **Jules and Elaine Byron** have a son, Scott Lawrence Byron, born on June 22, 1960, their second wedding anniversary. . . . **Gary Dischel** is still confident that he will be hearing from those of you who have not yet made arrangements to be at our 5th Year Reunion on June 9 and 10 and the Mayflower Hotel in Plymouth, Mass. Gary's address is Hotel Corporation of America, 464 Commonwealth Avenue, Boston 15, Mass.—**Alan M. May**, Secretary, 201 East 66th Street, New York, N.Y.; **Martin R. Forsberg**, Assistant Secretary, 11 Scottsfield Road, Allston 34, Mass.

## '58

Got a whole raft of letters this past month. From **Richard S. Glantz** came the news that **Richard A. Rosenthal** (the Hack) is working at Bell Labs in Whippany and in June will marry Patricia Wells from Simmons. . . . **Phil Banks** is at Cal Tech working on a doctorate in geophysics. Dick himself has had an ex-

citing and fast moving existence since graduation. After Harvard grad school, where as a teaching fellow he got a master's, he worked for Systems Development Corporation in Calif. At that point the Army cut his civilian life short for a six-month tour, and what a tour! At Fort Monmouth he taught NATO officers computer fundamentals, then served a short stint in Rome, Naples and Paris. Now he is with Itek in Boston. I just found a note on the back of **Mike Kenyon's** Christmas card; he is still a railroad man (good to know they have some competent people) in Salt Lake City. He has finally been converted to skiing and is in the right place for it. . . . In December **James Levine** received an M.S. from the University of Minnesota. . . . **Sander Weinreb's** name appeared along with some high power personalities on the program of a recent electronics symposium. He delivered a paper entitled "An Attempt to Detect the Galactic Deuterium Line Using Digital Autocorrelation Techniques" and is working at M.I.T. . . . **Ken Auer** writes about his second daughter, Tracy Lynn, who arrived last October—Development Engineer: Ken Auer; Director of Research: Mary L. Auer. The Auers are now in Cleveland where Ken is with Diamond Alkali in chemical marketing; all good men end up selling. . . . **Robert Zingali** attended a humdinger of a wedding on December 30 and he writes: "Joseph Arthur Mulloney, Jr. and Judith Ann Kelly (I think they're both Irish!) were joined in the holy bonds of matrimony on 12-30-61. Best man was none other than Dave McGrath, '59, and the proud ushers were good, old, **Joe Walsh**, big Joe Meaney, '59, (USA) and the Sprague kid himself, **Ron Hodge**. Other members of the now defunct "5:15 Club" that graced the wedding feast were Mr. and Mrs. Bill Bunker, Mr. and Mrs. Richard Curran, Mr. and Mrs. Peter Francis Lynch, Jr., Mr. and Mrs. Frank G. Tahmoush, Steve Hadjiyannis, Mr. and Mrs. Tom Magliozi, Lieutenant and Mrs. Freeman D. Shepherd, Mr. and Mrs. Tom Cook, Mrs. McGrath, myself, (Bob Zingali) and my future chief cook and bottlewasher, Maryanne LaManna.

**Diana C. Donald**, G, is making news in Plainsville, Conn., as a professional planning consultant to the Planning and Zoning Commission. She had been a senior planner for Hartford until mid-1961.—**Cornelius Peterson**, Secretary, 301 Allston Street, Brookline 46, Mass.

## '59

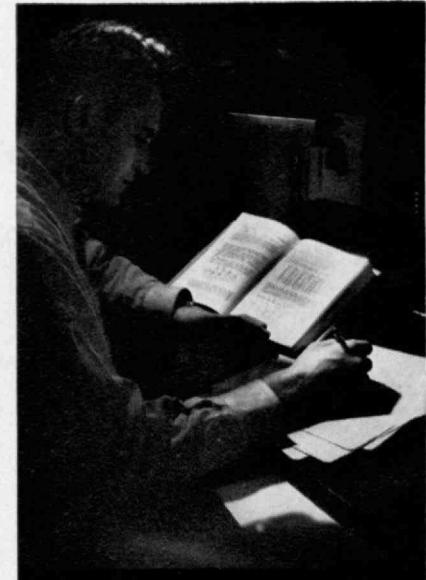
Things have been rather hectic for me these past few days. I just found out that I will be spending the next few months in Japan. I will be going on a short business trip but have convinced my roommate and our beloved classmate, **Al Oppenheim**, to handle the next issue or two of the Class News. Any letters to Alan or Assistant Secretary **Johnny McElroy** will be greatly appreciated. . . . I received a letter from **George G. Heller**. George is education chairman of the As-

sociation for Computing Machinery and was technical program co-ordinator of the 1961 Eastern Joint Computer Conference. He was also recently named to the Prize Awards Committee, American Federation of Information Processing Societies. . . . **John Christy** is still at Tech and is doing quite well. Likewise **Joel Brown**, '60, who is getting his Ph.D. in Biology at M.I.T. I understand **Dave Woronoff** is just finishing up at Boston College Law school. Best regards to all.—**Robert A. Muh**, Secretary, 1200 Commonwealth Avenue, Allston 34, Mass.

## '61

I told you last month that news of the class was at last beginning to accumulate in my file here, and that I'd make up for lost time with my May column—because not until then will a sizable portion of the class be getting *The Review*. I will pass on some of the news this month, however, before it gets any further out of date. . . . Since December first, three of you have written to me with some word of your whereabouts. **Pete Crichton** began active duty with the Army Signal Corps in February, in the Officers' Signal School in Fort Gordon, Ga. He can be reached via his home address, 325 Shore Road, Greenwich, Conn. . . . **Arthur C. Silverman** revealed that he was married last June to Donna L. Zobor (Hope I got the spelling right, Art!) of Portland, Maine. She's a 1961 Emerson graduate, now employed as a speed typist in the New York Public School System. Art is attending Columbia Law School. . . . **Chuck Arcand** passed on word that he's still here at M.I.T., doing graduate work in Course XVII (Building Engineering and Construction), with some work in his old department, Chemical Engineering, thrown in for good measure. Properties and engineering of plastics seems to be the field of interest. Thanks to all for writing; sorry I couldn't publish sooner. . . . We pass to a stack of Army releases, bringing news of our brothers-in-arms. Last fall saw the graduation of 2nd Lieutenant **Edward H. Sonn** and **James A. MacStravic** from the basic officer orientation course at the Army Signal Training Center, Fort Gordon, Ga.; they received instruction in the duties and responsibilities of a Signal Corps officer. Completing a similar course in the Quartermaster Corps, 2nd Lieutenants **Martin H. Nipomnick** and **Alan B. Wright** graduated from the Quartermaster School, Fort Lee, Va. last November.

Let me remind you once again, at least those of you in the New England-New York area, that May 5 is a day to circle on your calendar. In our only reunion-type function of the year, the class will get together at the Faculty Club in Building 52 for cocktails at 4 P.M. No formal reunion, just a get-together for all those who can make it. Wives, sweethearts, and all the rest are also welcome. I hope to see you there.—**Joseph Harrington, 3d**, Secretary, M.I.T. Graduate House 212-A, 305 Memorial Drive, Cambridge 39, Mass.



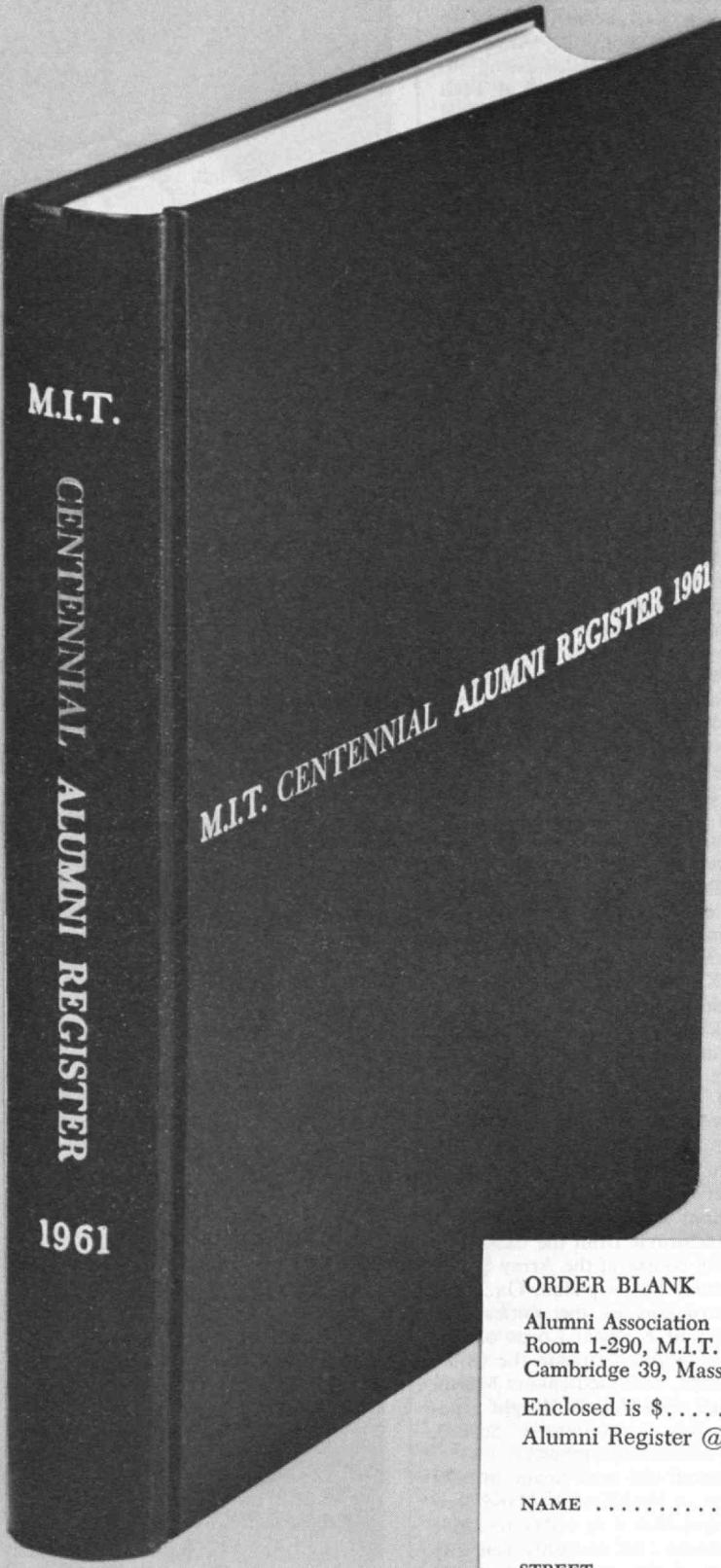
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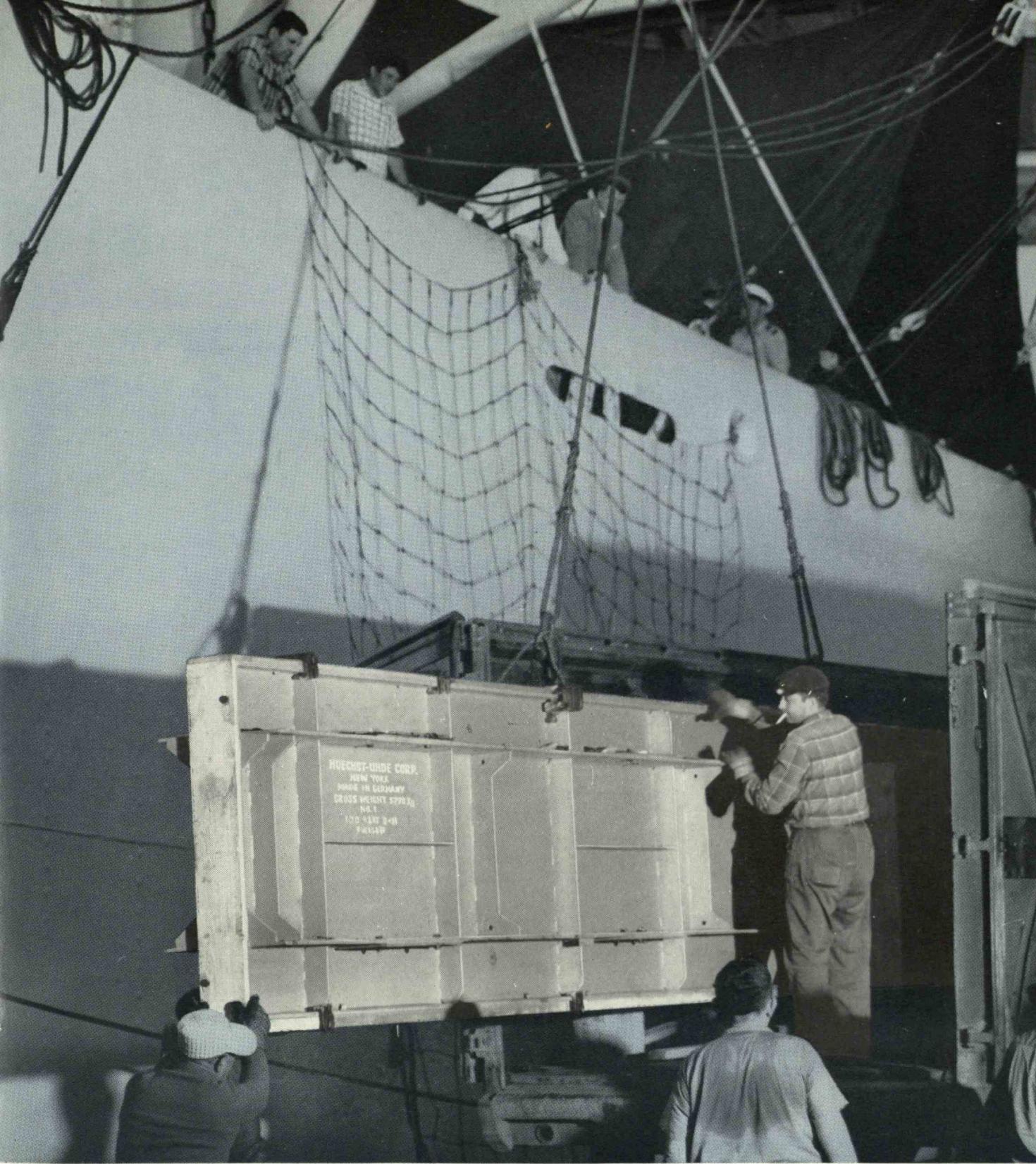
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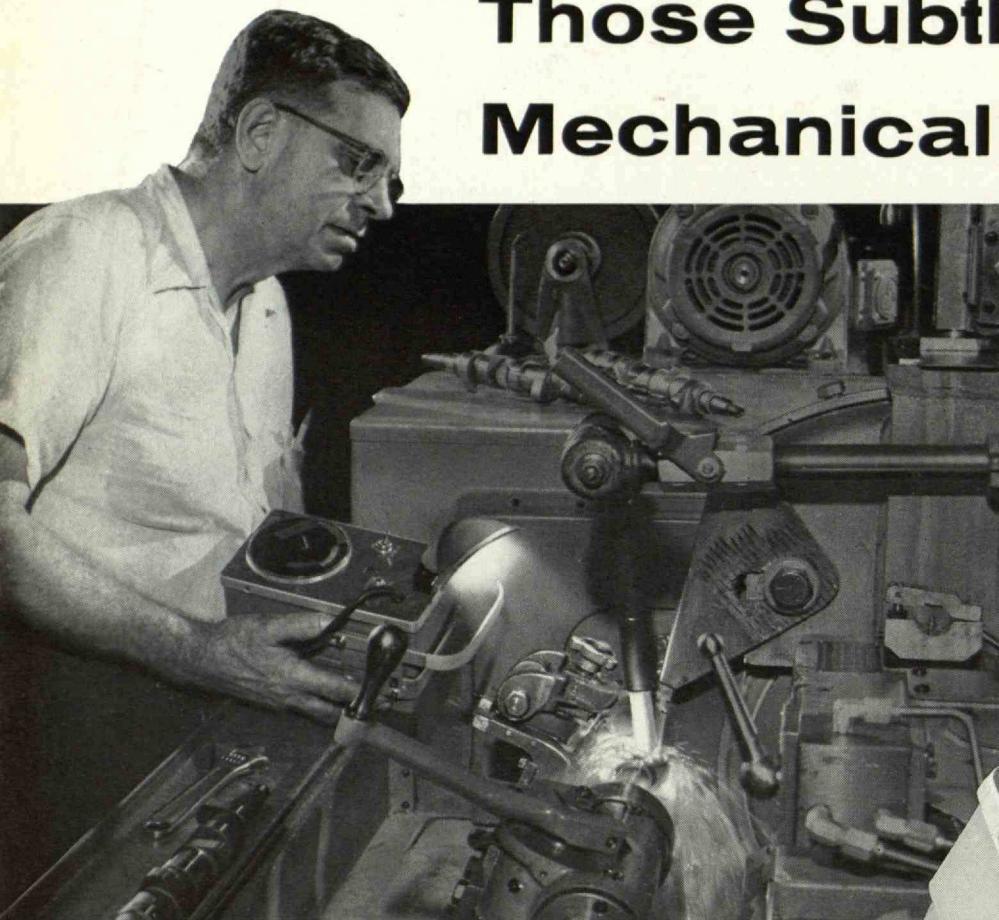


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